

mjt

SCIENTIFIC PUBLICATIONS AND PRESENTATIONS
RELATING TO PLANETARY QUARANTINE

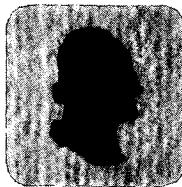
Volume V
The 1971 Supplement

(NASA-CR-127112) SCIENTIFIC PUBLICATIONS
AND PRESENTATIONS RELATING TO PLANETARY
QUARANTINE. VOLUME 5: THE 1971 SUPPLEMENT
Biological F.D. Bradley, et al (George
Washington Univ.) Jul. 1972 59 p CSCL 06M G3/04 33091

N72-26074

Unclassified

July 1972



BIOLOGICAL SCIENCES COMMUNICATION PROJECT
THE GEORGE WASHINGTON UNIVERSITY MEDICAL CENTER
2001 S STREET, N.W., WASHINGTON, D.C. 20009
Telephone (202) 462-5828

SCIENTIFIC PUBLICATIONS AND PRESENTATIONS
RELATING TO PLANETARY QUARANTINE

Volume V
The 1971 Supplement

Frank D. Bradley, B.A., M.A.
Marcy R. Rettig, B.A.

Work Performed under NASA Contract NSR-09-010-027

for

Planetary Quarantine Office, Planetary Programs
NASA Office of Space Science

BIOLOGICAL SCIENCES COMMUNICATION PROJECT
David C. Weeks, Ph.D., Director
The Medical Center
The George Washington University
Washington, D.C.

GWU-BSCP 72-07P
July 1972

PRECEDING PAGE BLANK NOT FILMED

PREFACE

This compilation is the fifth annual supplement to the original bibliography issued in June, 1967.

The annual supplements consist of citations of documents relating to planetary quarantine; many, but not all, refer to work supported by the planetary Quarantine Office, Planetary Programs, National Aeronautics and Space Administration, Washington, D.C. The citations are compiled primarily to bring up to date the survey of the current literature in the field. Also there continues to be a back gathering of references to documents, not previously cited, which are of substantive or historical value to the planetary quarantine program.

In certain references, numerals preceded by the letter(s) A, AD, N, X, NASA-CR, NASA-SP, or NASA-TM-X are given parenthetically as part of the citation. These numbers are to assist in the procurement of the document. Those carrying "A" numbers are obtainable, for a fee, from the

American Institute of Aeronautics and Astronautics, Inc.
Technical Information Service
750 Third Avenue
New York, New York 10017

Documents with "N," "NASA-CR," and "NASA-TM-X" numbers are available, at set rates, from the

National Technical Information Service
U.S. Department of Commerce
Springfield, Virginia 22151
"NASA-SP" coded documents are obtainable from the
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

"X" numbered documents are limited in their distribution to NASA associated or contractor personnel. "AD" coded documents are generally available from the

Defense Documentation Center
Cameron Station
Alexandria, Virginia 22314

In this compilation the availability of a microfiche of the cited document is indicated by the use of the symbol # following the reference number. In each case the fiche is available from the same source as the hard copy document.

PRECEDING PAGE BLANK NOT FILMED

CONTENTS

Preface	iii
Citations	1
Author Index	23
Permuted Title Index	27
Journals Publishing	
Planetary Quarantine Related Articles	49
Proceedings Publishing	
Planetary Quarantine Related Articles	51
Corporate Sources	53

CITATIONS

1954

1. DENNY, C.B., C.W. Bohrer and J.M. Reed. Investigation of gamma sterilization. Washington, D.C., National Canners Association. 1954. Research Report 3-54, 37 p. (AD 50 089; AECU-2952)

1955

2. GREENSPAN, F.P. M.A. Johnsen and P.C. Trexler. Peracetic acid aerosols. IN: Chemical Specialties Manufacturers Association's Proceedings of the 42nd Annual Meeting. New York. 1955. p. 59-64.

1959

3. BAKANAUSKAS, S. Resistance of microorganisms to high vacuums. Wright-Patterson Air Force Base, Ohio, Wright Air Development Center. 1959. WADC Technical Note 59-142, 14 p. (AD 228 156)

1960

4. ALG, R.L., M.S. Barbeito and G.J. Harris. Disinfection of aerosol chambers with Beta-propiolactone. Fort Detrick, Md., U.S. Army Chemical Corps, Biological Laboratories. 1960. Technical Report BL26, 33 p. (AD 240 239)
5. BÜCHER, K. Observations regarding the sterilizing effect of ethylene oxide/carbon dioxide mixtures on bacteria and bacteria spores. IN: Reports to the International Congress of Microbiological Standardization, 1960. Washington, D.C., U.S. Joint Publications Research Service. 1962. JPRS: R-2318-D. p. 397-401. (AD 293 653)
6. PHILLIPS, G.B. and E. Halen, Jr. Use of ultraviolet radiation in microbiological laboratories. Fort Detrick, Md., U.S. Army. 1960. Technical Report BL28, 295 p. (AD 250 124)

1961

7. JACOBSON, N.F. The operations problem of sterilization. Presented at American Rocket Society Missile and Space Vehicle Testing Conference, Los Angeles, 1961. No. 1671-61. New York, American Rocket Society. 1961. 5 p.

8. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. Proceedings of meeting on problems and techniques associated with the de-contamination and sterilization of spacecraft, 29 June 1960. Posner, J., ed. Washington, D.C. 1961. 57 p. (N62-71345#; NASA-TN-D-771)

1962

9. PHILLIPS, G.B., E. Hanel, Jr. and G.G. Gremillion. Practical procedures for microbial decontamination. Fort Detrick, Md., U.S. Army Technical Division. 1962. Technical Manuscript 2, 29 p.
10. PIERCE, C.M. The use of ethylene oxide for sterilization: a partially annotated bibliography. Sunnyvale, Calif., Lockheed Missiles and Space Company. 1962. Special Bibliography SB-62-35, 12 p. (AD 404 263)
11. WILLARD, M. Surveyor sterilization. Part III. Further compatibility studies on materials and components with ethylene oxide/Freon 12 and heat. Culver City, Calif., Hughes Aircraft Co. 1962. Research Study 292, 24 p.
12. WILLARD, M. and V.K. Entrekin. Surveyor sterilization. Part II: A literature review of the physical, chemical and biological properties of ethylene oxide/Freon 12 and its compatibility with materials and components. Culver City, Calif., Hughes Aircraft Co. 1962. Research Study 283, 24 p.

1963

13. ALG, R.L., G.J. Harris and M.S. Barbeito. Disinfection of microbial aerosol chambers with Beta-propiolactone. Fort Detrick, Md., U.S. Army Chemical Corps, Biological Laboratories. 1963. Technical Manuscript 35, 14 p. (AD 298 138)
14. CAMERON, R.E. The role of soil science in space exploration. Pasadena, Calif., Jet Propulsion Laboratory. 1963. Technical Report 32-399, 16 p.
15. COOK, A.M. and T.A. Roberts. Gamma irradiation of Bacillus subtilis spores. Journal of Pharmacy and Pharmacology (London) 15:345-346. 1963.
16. JET PROPULSION LABORATORY. Lunar rough landing capsule development program. Final Technical Report. Prepared by Ford Motor Co., Newport Beach, Calif. 1963. Publication #U-2007, 249 p.
17. KRETZ, A.P., Jr. High vacuum sterilization conversion. Hospital Progress 44:124-125. March 1963.

18. LICCIARDELLO, J.J. and J.T.R. Nickerson. Some observations on bacterial thermal death time curves. *Applied Microbiology* 11:476-480. 1963.
19. MILES, J.R., Sr. Problems in the design of unmanned spacecraft for planetary and interplanetary exploration. Presented at IAS 31st Annual Meeting, New York, N.Y. 1963. Institute of the Aerospace Sciences #63-36, 18 p.
20. NICKS, O.W. and O.E. Reynolds. Decontamination and sterilization of lunar and planetary spacecraft. *Science* 142:539-540. 1963.
21. PORTNER, D.M. Use of sporicides and heat to sterilize resins. Protection Branch Report of test number 4-64. Fort Detrick, Md., U.S. Army. 1963. 7 p. (N65-16836#; NASA-CR-52088)
22. ROBERTO, T.L. and L.A. Irvine. Studies with a simulated Martian environment. Germination and growth of bacterial spores. Brooks Air Force Base, Texas, USAF School of Aerospace Medicine. 1963. SAM-TDR-63-75, 6 p. (N64-12340; AS 424 189)
23. SILVERMAN, G.J. and R.P. Giannamico. Study of viability of micro-organisms in simulated space. Quarterly Status Report for the period 1 August through 31 October 1963. Cambridge, Mass., National Research Corporation. 1963. 9 p. (X64-12190; NASA-CR-55556)

1964

24. HAYNES, N.R. and H.J. Gordon. A study of the probability of depositing viable organisms on Mars during the Mariner 1964 mission. Pasadena, Calif., Jet Propulsion Laboratory. 1964. JPL Technical Memorandum #33-194. 7 p. (N66-25065#; NASA-CR-74629)
25. NICKS, O.W. Sterilization of Mars spacecraft. *Astronautics and Aeronautics* 2(10):21. 1964.
26. PORTNER, D.M. Microbial contamination in a clean room when occupied by operating personnel. Protection Branch Report of test number 1-65. Fort Detrick, Md., U.S. Army, Physical Defense Division. 1964. 11 p.
27. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station, Phoenix, Ariz. Laboratory for monitoring bacterial contamination of space components. Quarterly Report of July - September 1964. 1964. Report #1, 2 p.

28. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station, Phoenix, Ariz. Quarterly Report for the period of October - December 1964. 3 p.

1965

29. BRUCH, C.W. Dry-heat sterilization for planetary-impacting space-craft. Presentation at 65th Annual Meeting of American Society for Microbiology, Atlantic City. Washington, D.C., American Society for Microbiology. 1965. 81 p.
30. BUSSOLINI, J.J. and E.M. Sternbach. An integrated test program for determining component sterilization-reliability effects. Bethpage, L.I., New York, Grumman Aircraft Engineering Corp. 1965. Note #ADN 09-14-65.2
31. DYNAMIC SCIENCE CORPORATION. Sterilization handbook (Appendix). 1965. Final Report SN-37. 84 p. (N65-24297#; NASA-CR-62838)
32. IMSHENETSKY, A.A. and S.V. Lysenko. Ultra-high vacuum and micro-organisms. IN: Florkin, M., ed. Life Sciences and Space Research III. Amsterdam, North-Holland Publishing Co. 1965. p. 142-148.
33. JET PROPULSION LABORATORIES. Experimental study of sterile assembly techniques. Final Report, Vol. I. Prepared by Lockheed Missiles and Space Co., Sunnyvale, Calif. 1965. (M-56-65-1)
34. NEUMANN, T.W. Study of the automated biological laboratory, project definition. Final Report, Vol. I of VI - summary. Newport Beach, Calif., Aeronautics Division of Philco Corp., Ford Motor Co. 10 September, 1965. Publ. #U-3237. 52 p. (N67-16575#; NASA-CR-81309)
35. PISANO, M.A. An investigation of a sono-chemical approach in sterilization problems. Second Semiannual Progress Report. 1 January - 1 July 1965. Jamaica, New York, St. Johns University. 1965. 7 p.
36. PISANO, M.A. An investigation of a sono-chemical approach in sterilization problems. Third Semiannual Progress Report. 1 July - 31 December 1965. Jamaica, New York, St. Johns University. 1965. 8 p.
37. SPACE SCIENCE BOARD. Conference on hazard of planetary contamination due to microbiological contamination in the interior of spacecraft components. Washington, D.C., National Academy of Sciences - National Research Council. 1965. 16 p.

38. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station. Services provided in support of the planetary quarantine requirements of the National Aeronautics and Space Administration. Tenth quarterly report for period of July - September 1965. Phoenix, Ariz. 1965. 2 p.
39. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station. Services provided in support of the planetary quarantine requirements of the National Aeronautics and Space Administration. 11th quarterly report for period of October - December 1965. Phoenix, Ariz. 1965. 2 p.

1966

40. BEAKLEY, J.W., W.J. Whitfield and J.C. Mashburn. Deposition of nutrients to surfaces by Rodac plates (Part II of Microbiological Studies Relating to Clean Environments). Albuquerque, New Mexico, Sandia Laboratory. 1966. SC-RR-66-386. 9 p. (N67-20744#)
41. BROWN, A.H. The special problem of encapsulated contaminants. IN: Biology and the Exploration of Mars; report of a study held under the auspices of the Space Science Board, National Academy of Sciences National Research Council, 1964-1965. Edited by Pittendrigh, C.S., W. Vishniac and J.P.T. Pearman. Washington, D.C.. 1966. Publication 1296 NAS/NRC. p. 482-484. (N66-36495#; NASA-CR-77938)
42. CORNELL, R.G. Spacecraft sterilization requirements. Tallahassee, Fla., Florida State University, Department of Statistics. Technical Report 1. 1966. 14 p.
43. DAVIES, R.W. and N.H. Horowitz. Spacecraft sterilization - implications and suggestions. IN: Brown, A.H. and M. Florkin, eds. Life Sciences and Space Research IV. Amsterdam, North-Holland Publishing Co. 1966. p. 197-220. (N66-81797; NASA-CR-63337; A66-35578)
44. HOROWITZ, N.H. Spacecraft sterilization. IN: Biology and the Exploration of Mars; report of a study held under the auspices of the Space Science Board, National Academy of Sciences National Research Council, 1964-1965. Edited by Pittendrigh, C.S., W. Vishniac and J.P.T. Pearman. Washington, D.C. 1966. Publication 1296 NAS/NRC. p. 467-469. (N66-36466 thru N66-36497#; NASA-CR-77938)
45. LeDOUX, F.N. Biological decontamination of a spacecraft system. Greenbelt, Md., Goddard Space Flight Center. 1966. Goddard Space Flight Center report X-723-66-155. 15 p.

46. MECKLER, M. and P.E. Silver. Interdisciplinary design evaluation models of bioclean facilities are needed for spacecraft sterilization. *Air Engineering* 8(8):32-34, 37. 1966.
47. PISANO, M.A. An investigation of a sono-chemical approach in sterilization problems. Fourth Semiannual Progress Report. 1 January - 30 June 1966. Jamaica, New York, St. Johns University. 1966. 8 p. (N66-32135#; NASA-CR-76618)
48. PISANO, M.A. An investigation of a sono-chemical approach in sterilization problems. Fifth Semiannual Progress Report. 1 July - 31 December 1966. Jamaica, New York, St. Johns University. 1966. 7 p.
49. RIDER, T.H. Comparative studies of conceptual design and qualification procedures for a Mars probe/lander. Final report. Vol. IV: Sterilization, Appendix C. Lowell, Mass., Avco Corp. 1966. 62 p. AVSSD-0006-66-RR. CCN No. 3.
50. SALISBURY, J.W. Bibliography of lunar and planetary research, 1960-1964. Bedford, Mass., Air Force, Cambridge Research Labs. 1966. 524 p. (AD 628 792#)
51. SCHALKOWSKY, S. and R. Wiederkehr. Log-normal model for microbial survival in heat sterilization. Washington, D.C., Exotech, Inc. 1966. Report TR-015. 43 p. (N67-12997#; NASA-CR-80373)
52. SCHALKOWSKY, S. and R. Weiderkehr. A stochastic sterilization model. Washington, D.C., Exotech, Inc. 1966. Report TR-13. 22 p. (N66-27536#; NASA-CR-75383)
53. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station. Services provided in support of the planetary quarantine requirements of the National Aeronautics and Space Administration. 12th quarterly report for period of January - March 1966. Phoenix, Ariz. 1966. 3 p. (N66-25526#; NASA-CR-74868)
54. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station. Services provided in support of the planetary quarantine requirements of the National Aeronautics and Space Administration. 14th quarterly report for period of April - June 1966. Phoenix, Ariz. 1966. 36 p. (N66-30488#; NASA-CR-76066)
55. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station. Services provided in support of the planetary quarantine requirements of the National Aeronautics and Space Administration. 15th quarterly report for period of July - September 1966. Phoenix, Ariz. 1966. 31 p.

1967

56. DOYLE, J.E. and R.R. Ernst. Resistance of Bacillus subtilis var. niger spores, occluded in water insoluble crystals, to three sterilization agents. Applied Microbiology 15:726-730. 1967.
57. FOOKS, J. Spacecraft sterilization and planetary quarantine, background of the sterilization requirements. Presentation at the University of Virginia, Wallops Island, Va. as paper 15.1. 1967. 45 p.
58. FRASER, S.J. The survival and release of viable microorganisms from a solid material after a hard impact. 1967. Rev. Ltr. D2-114143-1.
59. HAYNES, N.R. Mariner Venus 67 - prelaunch analysis of contamination probability. Pasadena, Calif., Jet Propulsion Laboratory. 1967. JPL Project Document 123. 25 p.
60. HELDMAN, D.R., Fe C.A. Sunga and T.I. Hedrick. Microorganism shedding by human beings. Contamination Control, Vol. 6. p. 28-31, 45. 1967.
61. HOROWITZ, N.H. Microorganisms on Mars. Science 156:1436. 1967.
62. JOHNSTON, W.E. and F.S. Naylor. Data Management Study, Volume V; Appendix B - Contractor Data Package, Planetary Quarantine, General Electric document #VOY-CO-FR. Prepared by General Electric Co. for Jet Propulsion Laboratory. 1967. 55 p. (N67-40533#; NASA-CR-89706)
63. MORRIS, M.E. The vacuum probe for removing organisms for counting. IN: AEC/NASA Symposium on Contamination Control: Current and Advanced Concepts in Instrumentation and Automation. Albuquerque, New Mexico, Sandia Corporation. 1967. p. 271-286. (N68-29346#; NASA-CR-95657)
64. OSWALT, F.W., J.J. McDade, C.M. Franklin and V.L. Dugan. An improved sonification method for removal of microorganisms from surfaces. Albuquerque, New Mexico, Sandia Corporation. 1967. SC-RR-67-492. 22 p. (N67-34933#; NASA-CR-87429)
65. PHEIL, C.G., I.J. Pflug, R.C. Nicholas and J.A.L. Augustin. Effect of various gas atmosphere on destruction of microorganisms in dry heat. Applied Microbiology 15(1):120-124. 1967.
66. PISANO, M.A. An investigation of a sono-chemical approach in sterilization problems. Sixth Semiannual Progress Report. 1 January - 30 June 1967. Jamaica, New York, St. Johns University. 1967. 7 p.

67. RIEMENSNIDER, D.K. Reduction of microbial shedding from humans. Contamination Control 6:19-22. 1967. (A67-36802)
68. SANDIA LABORATORIES, Planetary Quarantine Department, Albuquerque, New Mexico. Fourth Quarterly Report of Progress for period ending 31 March 1967. 15 p. (N67-25661#; NASA-CR-83829)
69. SANDIA LABORATORIES, Planetary Quarantine Department, Albuquerque, New Mexico. Fifth Quarterly Report of Progress for period ending 30 June 1967. 21 p. (N67-30747#; NASA-CR-85573)
70. SANDIA LABORATORIES, Planetary Quarantine Department, Albuquerque, New Mexico. Sixth Quarterly Report of Progress for period ending September 1967. 20 p.
71. SANGUINETTI, M.J. (ed.) AEC/NASA symposium on contamination control; current and advanced concepts in instrumentation and automation. Albuquerque, New Mexico, Sandia Corporation. 1967. SC-M-68-94. 339 p. (N68-29324 thru N68-29349#; NASA-CR-95657)
72. SODEK, B. and J.C. Redmond. Review of the possible existence of a Jovian atmosphere. BioScience 17(2):97-99. 1967.
73. TARVER, P. Planetary quarantine plan, Voyager project. Pasadena, Calif., National Aeronautics and Space Administration, OSSA. 1967. Document 818-11-PQ001. 21 p.
74. U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, COMMUNICABLE DISEASE CENTER, Public Health Service, Phoenix Field Station. Services provided in support of the planetary quarantine requirements of the National Aeronautics and Space Administration. 16th quarterly report for the period of October - December 1966. Phoenix, Ariz. 1967. 22 p. (N67-18139#; NASA-CR-81775)
75. WEISS, K.F. and D.H. Strong. Some properties of heat-resistant and heat-sensitive strains of Clostridium perfringens. I. Heat resistance and toxigenicity. Journal of Bacteriology 93(1):21-26. 1967.
76. ZWERLING, S. Assembly/sterilizer facility feasibility program final report, Vol. I Prepared for Langley Research Center by General Electric Co. 1967. Document 67SD604. 81 p. (N67-32714#; NASA-CR-66439)
77. ZWERLING, S. Assembly/sterilizer facility feasibility program final report, Vol. II (Appendices). Prepared for Langley Research Center by General Electric Co. 1967. Document 67SD604. 219 p. (N67-32374#; NASA-CR-66440)

1968

78. ALLANDER, C. and E. Abel. Investigation of a new ventilating system for clean rooms. Medical Research Engineering, Vol. 7, Third Quarter, p. 28-38. 1968.
79. CHAN, J.C. and H.H. Gradebusch. Virucidal properties of dimethyl sulfoxide. Applied Microbiology 16(10):1625-1626. 1968.
80. LEONE, J.R. The thermal radiative characteristics of viable microorganisms. Presented at the Third Thermophysics Conference of the American Institute of Aeronautics and Astronautics, Los Angeles, Calif., as Paper 68-753. 1968. 8 p.
81. McDADE, J.J., F.L. Sabel, R. Akers and R.J. Walker. Microbiological studies on the performance of a laminar airflow biological cabinet. Applied Microbiology 16(7):1086-1092. 1968.
82. PETRAS, E. and K. Bisa. Überlebenschancen von mikroorganismen im milieu von ionosphäre und stratosphäre (Survival chances of microorganisms under the environmental conditions of ionosphere and stratosphere). Sauerland, Germany. 1968. 71 p. (N68-24091#)

1969

83. AUSTIN, P.R. Clean room personnel. Contamination Control 8(2): 28-31 and 34. 1969.
84. BARRETT, M.J. and L.J. Woodall. The release of buried microbial contamination by aeolian erosion. Appendix to Final Report NASw-1734. Washington, D.C., Exotech, Inc. 1969. TRSR 70-14. 13 p. (N70-27844 thru N70-27849#; NASA-CR-109886)
85. CUDDIHY, E.F., D.E. Walmsley and J. Moacanin. Investigations on sterilizable battery separators. Space Programs Summary 37-59, III:200-204. Pasadena, Calif., Jet Propulsion Laboratory. 1969.
86. KALFAYAN, S.H., R.H. Silver and V.W. Bellin. Effects of simulated Venus atmosphere on polymeric materials. Space Programs Summary 37-57, III:160-163. Pasadena, Calif., Jet Propulsion Laboratory. 1969.
87. LUTWACK, R. and W. von Hartman. Heat-sterilizable battery development. Space Programs Summary 37-59, III:101-102. Pasadena, Calif., Jet Propulsion Laboratory. 1969.
88. SAUNDERS, J.F. A cryobiologist's conjecture of planetary life. Cryobiology 6(3):151-159. 1969. (A70-30344)

89. SILVER, R.H., S.H. Kalfayan and V.W. Bellin. Simulation of the Venus atmosphere. Space Programs Summary 37-57, III:157-160. Pasadena, Calif., Jet Propulsion Laboratory. 1969.
90. SMITH, F.W. and M.K. Bruch. Reduction of microbiological shedding in clean rooms. IN: Developments in Industrial Microbiology, Vol. 10. Washington, D.C., American Institute of Biological Sciences. 1969. p. 290-300.

1970

91. BELIKOVA, Ye.V., G.S. Komolova and I.A. Yegorov. Influence of a set of extremal factors on biologically active substances. IN: Imshenetsky, A.A., ed. Zhizn' vne Zemli i Metody yeye Obnaruzheniya (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. 207 p. Washington, D.C. NASA TT F-710. 1971. p. 117-128. (A71-28688#)
92. BRUCH, C.W. and M.K. Bruch. Gaseous disinfection. IN: Bernarde, M.A., ed. Disinfection. New York, Marcel Dekker, Inc. 1970. p. 149-206.
93. BÜCKER, H. and G. Horneck. Survival of microorganisms under simulated space conditions. IN: Vishniac, W. and F.G. Favorite, eds. Life Sciences and Space Research. VIII. Proceedings of the Open Meeting of Working Group V at the 12th Plenary Meeting of COSPAR, Prague, 11-24 May 1969. p. 33-38. Amsterdam, North-Holland Publishing Co. 1970.
94. ENLOW, D. Planetary quarantine: recontamination phase. Reentry and Environmental Systems Division, General Electric Co. 1970. 38 p.
95. GARST, D.M. and K.F. Lindell. A precisely controlled, low range humidity system. Albuquerque, New Mexico, Sandia Laboratories. 1970. SC-RR-70-775. 15 p. (N71-23823#; NASA-CR-118024)
96. GOPPERS, V. and I.J. Pflug. Detection of low levels of microbial contamination on surfaces by chemical approaches. IN: Pflug, I.J., ed. Environmental Microbiology as Related to Planetary Quarantine. Semiannual Progress Report 5, p. 9. Minneapolis, Minn., University of Minnesota, School of Public Health. 1970.
97. GOPPERS, V. and I.J. Pflug. Dry heat destruction rates of Bacillus subtilis var. niger in a closed system: B. Measurement of water. IN: Pflug, I.J., ed. Environmental Microbiology as Related to Planetary Quarantine. Semiannual Progress Report 5, p. 17-20. Minneapolis, Minn., University of Minnesota, School of Public Health. 1970.

98. HALL, C.F. Pioneer program. Pioneer F/G planetary quarantine plan. Moffet Field, Calif., National Aeronautics and Space Administration, Ames Research Center. Document #PC-204. 1970. 21 p.
99. MOORE, B., I.J. Pflug, R. Gove and Y. Thun. Dry heat destruction rates of Bacillus subtilis var. niger in a closed system: A. Thermal destruction studies. IN: Pflug, I.J., ed. Environmental Microbiology as Related to Planetary Quarantine. Semiannual Progress Report 5, p. 11-16. Minneapolis, Minn., University of Minnesota, School of Public Health. 1970. (N71-31601#; NASA-CR-119638)
100. PFLUG, I.J., ed. Environmental microbiology as related to planetary quarantine. Semiannual Progress Report 5. Minneapolis, Minn., University of Minnesota, School of Public Health. 1970. (N71-31601#; NASA-CR-119638)
101. PROKOP, A. and A.E. Humphrey. Kinetics of disinfection. IN: Bernarde, M.A., ed. Disinfection. New York, Marcel Dekker, Inc. 1970. p. 61-83.
102. SAGAN, C. The surface environment and possible biology of Mars. IN: Dollfus, A., ed. Surfaces and Interiors of Planets and Satellites. New York, Academic Press. 1970. p. 535-556.
103. SECKBACH, J. and W.F. Libby. Vegetative life on Venus? Or investigations with algae which grow under pure CO₂ in hot acid media at elevated pressures. Space Life Sciences 2(2): 121-143. 1970. (AD 723 454#)
104. SMITH, G., I.J. Pflug, R. Gove and Y. Thun. Survival of microbial spores under several temperature and humidity conditions. IN: Pflug, I.J., ed. Environmental Microbiology as Related to Planetary Quarantine. Semiannual Progress Report 5, p.1-8. Minneapolis, Minn., University of Minnesota, School of Public Health. 1970. (N71-31601#; NASA-CR-119638)
105. VESLEY, D., M. Halbert, I.J. Pflug, S. Maki and C. Henke. Dry heat destruction rates of microorganisms on surfaces. IN: Pflug, I.J., ed. Environmental Microbiology as Related to Planetary Quarantine. Semiannual Progress Report 5, p. 21-54. Minneapolis, Minn., University of Minnesota, School of Public Health. 1970. (N71-31601#; NASA-CR-119638)

1971

106. BACON, E.J. Planning, evaluation and analytical studies to implement planetary quarantine requirements. Fourth Quarterly Progress Report. Washington, D.C., Exotech Systems, Inc. 1971. 6 p.

107. BACON, E.J. Planning, evaluation and analytical studies to implement planetary quarantine requirements. Fifth Quarterly Progress Report. Washington, D.C., Exotech Systems, Inc. 1971. 48 p. (N71-33221#; NASA-CR-121423)
108. BACON, E.J. Planning, evaluation and analytical studies to implement planetary quarantine requirements. Sixth Quarterly Progress Report. Washington, D.C., Exotech Systems, Inc. 1971. 10 p.
109. BALLARD, D.W. Checklist of good contamination control practices from a manufacturing viewpoint. Albuquerque, New Mexico, Sandia Corporation. 1971. SC-M-70-549. 39 p.
110. BOND, W.W., M.S. Favero, N.J. Petersen and J.H. Marshall. Relative frequency distribution of D_{125C} values for spore isolates from the Mariner-Mars 1969 spacecraft. Applied Microbiology 21(5): 832-836. 1971.
111. BRADLEY, F.D. and M.F. Werts. Scientific publications and presentations relating to planetary quarantine. Vol. 5, 1970 Supplement. 1971. 118 p. (N71-32231#; NASA-CR-121325)
112. BRANNEN, J.P. Role of water activity in dry heat sterilization of microorganisms. Journal of Theoretical Biology 32:331-334. 1971.
113. BÜCKER, H., G. Horneck, R. Facius, M. Schwager, C. Thomas, G. Turcu and H. Wollenhaupt. Effects of simulated space vacuum on bacterial cells. Presented at XIV COSPAR, Seattle, 29 June 1971, as paper L.5.2. 1971. 7 p.
114. BÜCKER, H., G. Horneck and H. Wollenhaupt. Inactivation and division delay of Escherichia coli B/r by combined treatment with UV and vacuum. Biophysik 7:217-222. 1971.
115. CAMERON, R.E. and E.L. Merek. Growth of bacteria in soils from Antarctic dry valleys. Pasadena, Calif., Jet Propulsion Laboratory. 1971. Tech. Rep. 32-1522. 11 p. (N71-20172#; NASA-TM-X-66965)
116. CAMERON, R.E. and H.P. Conrow. Survival of Antarctic desert soil bacteria exposed to various temperatures and to three years of continuous medium-high vacuum. Pasadena, Calif., Jet Propulsion Laboratory. 1971. Report 32-1524. 6 p. (N71-20169#; NASA-CR-117313)

117. CAMPBELL, J.E. Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components. 24th Quarterly Report, 1 January - 31 March 1971. Cincinnati, Ohio, U.S. Department of Health, Education and Welfare, Food and Drug Administration, Cincinnati Research Laboratories. 1971. 16 p. (N71-27794#; NASA-CR-118870)
118. CAMPBELL, J.E. Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components. 25th Quarterly Report, 1 April - 30 June 1971. Cincinnati, Ohio, U.S. Department of Health, Education and Welfare, Food and Drug Administration, Cincinnati Research Laboratories. 1971. 6 p. (N71-35239#; NASA-CR-121920)
119. CHEATER, D.J., J.T. Negrey, D.L. McMenamin and J.J. Shull. A study of aseptic maintenance by pressurization. III. Final report. Prepared for Langley Research Center by General Electric Co. 1971. 58 p. (N71-37655; NASA-CR-1910)
120. CHRISTENSEN, M.R., G.F. Ervin, C.C. Gonzalez, R.H. Green, R.C. Koukol, M.N. Mansour, W. Stavro and D.M. Taylor. Contamination control. IN: Rept. 701-115. Advanced Review of Research and Advanced Development. 1 July 1970 - 30 June 1971. Vol. I (OSSA). p. 209-221. 1971.
121. DALEY, D.J. and J.L. Sliger. Development of parametric data for the establishment of an ETO cycle for decontamination of spacecraft. Final report. Prepared for the Jet Propulsion Laboratory by Becton, Dickinson and Company, Raleigh, North Carolina. 1971. 170 p. (N71-34-57#; NASA-CR-121764)
122. de ROOS, R. and I.J. Pflug. Estimation of particulate loads on components of devices manufactured in clean rooms. Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. Appendix C, p. 53-64. Minneapolis, Minn., University of Minnesota. 1971.
123. DILLON, R.T., D. Holdridge, J.R. Puleo and G.S. Oxborow. A computerized bacterial identification system as applied to planetary quarantine. Space Life Sciences 3(1):63-84. 1971.
124. DUGAN, V.L. A kinetic analysis of spore inactivation in a composite heat and gamma radiation environment. Space Life Sciences 2(4):498-505. 1971.
125. FARMER, F.H., J.J. Tulis, L.A. Taylor and V.A. Pace, Jr. Laboratory evaluation of the plastic vacuum probe surface sampler. Presented at the 10th Annual Meeting of American Association for Contamination Control, Washington, D.C. 24-26 May 1971. 12 p. (N71-31030#; NASA-TM-X-67253)

126. FAVERO, M.S. Microbiological assay of space hardware. Environmental Biology and Medicine 1(1):27-36. 1971.
127. FAVERO, M.S. Services provided in support of the planetary quarantine requirements of NASA. October-December 1970. Phoenix, Ariz. U.S. Department of Health, Education and Welfare, Communicable Disease Center, Public Health Service, Phoenix Laboratories. Report #32. 1971. 30 p. (N71-15940#; NASA-CR-116182)
128. FAVERO, M.S. Services provided in support of the planetary quarantine requirements of NASA. January-March 1971. Phoenix, Ariz. U.S. Department of Health, Education and Welfare, Communicable Disease Center, Public Health Service, Phoenix Laboratories. Report #33. 1971. 22 p. (N71-23825#; NASA-CR-118017)
129. FAVERO, M.S. Services provided in support of the planetary quarantine requirements of NASA. April-June 1971. Phoenix, Ariz. U.S. Department of Health, Education and Welfare, Communicable Disease Center, Public Health Service, Phoenix Laboratories. Report #34. 1971. 25 p. (N71-30663#; NASA-CR-119313)
130. FAVERO, M.S. Services provided in support of the planetary quarantine requirements of NASA. July-September 1971. Phoenix, Ariz. U.S. Department of Health, Education and Welfare, Communicable Disease Center, Public Health Service, Phoenix Laboratories. Report #35. 1971. 20 p. (N71-37642#; NASA-CR-122844)
131. FEDOROVA, R.I. Vozmozhnost' rasprostraneniaia zhiznesposobnykh zarodyshei v kosmicheskem prostranstve (Possibility of the spreading of viable germs in outer space). IN: Imshenetsky, A.A., ed. Zhizn' vne Zemli i Metody yeye Obnaruzheniya' (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. p. 125-135. Washington, D.C., NASA TT F-710, 1971. p. 154-167. (A71-28961#)
132. FRASER, S.J., R.L. Olson and R.H. Green. Microbial release from solids after simulated hard landings. IN: Vishniac, W., ed. Life Sciences and Space Research IX:139-144. Berlin, Akademie-Verlag. 1971. (A70-31664#)
133. FULLER, H.V. A description of the model assembly sterilizer for testing (MAST). Langley Research Center, 19 March 1971. LWP 949. (Limited distribution) 26 p.

134. GARST, D.M. and K.F. Lindell. A study of the dry heat resistance of naturally occurring organisms widely dispersed on a surface. Albuquerque, New Mexico, Sandia Laboratories. Planetary Quarantine Applied Science Division 1742. 1971. SC-RR-71 0742. 21 p. (N72-14043#)
135. GONZALEZ, C. and W. Stavro. Flight path and mission strategies to satisfy outer planet quarantine constraints. AAS-71-319. Presented at AAS/AIAA Astrodynamics Specialists Conference, Ft. Lauderdale, Florida. 1971. 11 p. (N71-36160; NASA-CR-121804)
136. GONZALEZ, C.C. Planetary quarantine constraints for advanced missions. Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 14 p.
137. COPPERS, V. and H.J. Paulus. Detection of low levels of microbial contamination on surfaces by chemical approaches. Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. 1971. 9 p.
138. GREEN, R.H. and D.M. Taylor. Planetary quarantine supporting activities. Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 11 p.
139. GREEN, R.H., D.M. Taylor, E.A. Gustan, S.J. Fraser and R.L. Olson. Survival of microorganisms in a simulated Martian environment. Space Life Sciences 3(1):12-24. 1971.
140. GUSTAN, E.A., R.L. Olson, D.M. Taylor and R.H. Green. Effects of aeolian erosion on microbial release from solids. Presented at COSPAR, Seattle, as paper L.1.6. Seattle, Washington, Boeing Co. 1971. 7 p. (N71-33380#; NASA-CR-14122; A71-33796#)
141. GUSTAN, E.A. and R.L. Olson. Release of microorganisms from solid materials. Final report. Prepared for the Jet Propulsion Laboratory by Aerospace Group, Boeing Co., Seattle, Washington. 1971. 85 p. (N71-34056#; NASA-CR-121707)
142. HALL, L.W. and R.G. Lyle. Foundations of planetary quarantine. Experimental Biology and Medicine 1(1):5-8. 1971.
143. HALL, L.B., ed. Planetary quarantine: Principles, methods and problems. Part I. Environmental Biology and Medicine 1(1): 1-120. 1971.

144. HOFFMAN, A.R. and R.J. Reichert. Mariner Mars 1971 planetary quarantine plan. Part I, Revision A. Pasadena, Calif., Jet Propulsion Laboratory. 1971. Project Document 610-18. 75 p.
145. HOFFMAN, A.R. and R.J. Reichert. Mariner Mars 1971 post-launch analysis of compliance with planetary quarantine requirements. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 28 p. (N71-37643#; NASA-CR-122845)
146. HOFFMAN, A.R. and R.J. Reichert. Mariner Mars 1971 pre-launch analysis of probability of planetary contamination. Part II. Pasadena, Calif., Jet Propulsion Laboratory. 1971. Project Document 610-18. 144 p.
147. HOFFMAN, A.R. Microbial burden prediction model. IN: Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Pasadena, Calif., Jet Propulsion Laboratory. 1971. Document 900-484. 13 p.
148. HOFFMAN, A.R., R.J. Reichert, N.R. Haynes and L.B. Hall. Planetary quarantine analysis for an unmanned Mars orbiter. Paper L.1.4. of 14th Plenary Meeting of COSPAR. Seattle, Washington. 17 Juen - 2 July 1971. 18 p. (N71-30826#; NASA-TM-X-67238; A71-33799#)
149. HORNECK, G., H. Bücker and H. Wollenhaupt. Survival of bacterial spores under some simulated lunar surface conditions. IN: Vishniac, W., ed. Life Sciences and Space Research IX. Berlin, Akademie-Verlag. 1971. p. 119-124. (A71-40567#)
150. HOROWITZ, N.H. The search for life on Mars - where we stand today. Science and Public Affairs - Bulletin of the Atomic Scientists. XXVII(9):13-17. 1971.
151. HUESCHEN, R.M. Design and development of a bio-isolator suit system (BISS). Langley Working Paper 950. Hampton, Va., Langley Research Center. U.S. National Aeronautics and Space Administration. 1971. 46 p.
152. IMSHENETSKY, A.A. and S.V. Lysenko. Effect of a high vacuum on microorganisms. IN: Imshenetsky, A.A., ed. Zhizn' vne Zemli i Metody yeye Obnaruzheniya (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. 207 p. Washington, D.C., National Aeronautics and Space Administration. 1971. p. 129-143. (A71-28689#; NASA TT F-710)

153. IMSHENETSKY, A.A. and S. Abyzov. Sterilization of spacecraft. IN: Imshenetsky, A.A., ed. *Zhizn' vne Zemli i Metody yeye Obnaruzheniya* (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. 207 p. Washington, D.C., National Aeronautics and Space Administration. 1971. p. 230-252. (A71-28696#; NASA TT F-710)
154. IRONS, A.S., H.W. Schneider and M.D. Wardle. Sterilization techniques. IN: JPL Report 701-115. Advanced Review of Research and Advanced Development. 1 July 1970 - 30 June 1971. Pasadena, Calif., Jet Propulsion Laboratory. Vol. 1 (OSSA). 1971. p. 197-201.
155. JACOBSON, R. and I.J. Pflug. Data handling system. IN: Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. Minneapolis, Minn., University of Minnesota. 1971. p. 33-40.
156. KNITTEL, M.D. and D.M. Taylor. Microbial analysis. IN: JPL Report 701-115. Advanced Review of Research and Advanced Development. 1 July 1970 - 30 June 1971. Pasadena, Calif., Jet Propulsion Laboratory. Vol. 1 (OSSA). 1971. p. 203-207.
157. KNITTLE, M.D., M.S. Favero and R.H. Green. Microbiological sampling of returned Surveyor III electrical cabling. Proceedings of the Second Lunar Science Conference 3:2715-2719. Cambridge, Mass., MIT Press. 1971. (A71-43814)
158. KOCH, E. Terrestrial organisms survive in simulated Jupiter atmosphere. *Sterne und Weltraum* 10:72-74. Germany. 1971. NASA TT F-13,905. (N71-33588#; NASA-TM-X-67238; A71-24688)
159. KUZYRUINA, L.A. and V.M. Yakshina. Behavior of certain soil microorganisms in the "artificial Mars" chamber. IN: Imshenetsky, A.A., ed. *Zhizn' vne Zemli i Metody yeye Obnaruzheniya* (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. 207 p. Washington, D.C., National Aeronautics and Space Administration. 1971. p. 144-153. (A71-28690#; NASA TT F-710)
160. LUTWACK, R. Heat sterilizable separators. IN: Fleischer, A. and J.J. Lander, eds. Zinc-silver oxide batteries. Proceedings of the fall meeting of the Electrochemical Society, Montreal, 6-11 October 1968. p. 283-294. New York, John Wiley and Sons. 1971.
161. LYLE, R.G. Outlines for state-of-the-art documents to be prepared under Task 12 of NASw-2062. Washington, D.C., Exotech Systems, Inc. 1971. 39 p.

162. McDADE, J.J. Control of microbial contamination. Environmental Biology and Medicine 1(1):37-62. 1971.
163. MANSOUR, M.N. Post launch recontamination studies. IN: Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 27 p. (N72-19094#; NASA-CR-125688)
164. MANUFACTURING CHEMISTS ASSOCIATION. Properties and essential information for safe handling and use of ethylene oxide. Chemical Safety Data Sheet SD-38, revised. Washington, D.C., The Association. 1971. 26 p.
165. MOORE, B., I. Pflug, R. Gove and Y. Thun. Dry heat destruction rate of Bacillus subtilis var. niger in a closed system. IN: Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. p. 17-23. 1971. (N72-11075#; NASA-CR-123326)
166. PFLUG, I.J., G. Smith, M. Halbert and S. Maki. Dry heat destruction rates of microorganisms on surfaces. IN: Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. p. 25-31. 1971. (N72-11075#; NASA-CR-123326)
167. PFLUG, I.J. Environmental microbiology as related to planetary quarantine. Semiannual Progress Report 6. Minneapolis, Minn., University of Minnesota, School of Public Health. 1971. 71 p. (N72-11075#; NASA-CR-123326)
168. PFLUG, I.J. Sterilization of space hardware. Environmental Biology and Medicine 1(1):63-81. 1971.
169. PHILLIPS, G.B. Back contamination. Environmental Biology and Medicine 1(1):121-160. 1971. (A72-10825)
170. REYES, A.L. Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components. 23rd Quarterly Report of Progress for the period 1 October - 31 December 1970. Cincinnati, Ohio. HEW, Food and Drug Administration, Cincinnati Research Laboratories. 1971. 11 p. (N71-34054#; NASA-CR-121727)
171. ROARK, A.L. and M.C. Reynolds. A computerized program for statistical treatment of biological data. SC-RR-71 0681. Albuquerque, New Mexico, Sandia Laboratories. 1971. 22 p. (N72-11210#; NASA-CR-123352)

172. SANDBERG, R., S. Maki, G. Smith and I.J. Pflug. Separation of a soil suspension of less than 43 micron particle size into <5, 5 to 10, and 30 to 43 micron fractions. IN: Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. Appendix D, p. 65-71. Minneapolis, Minn., University of Minnesota. 1971. (N72-11075#; NASA-CR-123326)
173. SANDIA LABORATORIES. Twentieth quarterly report on planetary quarantine program. 1971. 70 p. (N71-36161#; NASA-CR-121921)
174. SANDIA LABORATORIES. Twenty-first quarterly report on planetary quarantine program. For period ending 30 June 1971. 1971. 80 p. (N71-30662#; NASA-CR-119314)
175. SANDIA LABORATORIES, Planetary Quarantine Department. Twenty-second quarterly report of progress for period ending 30 September 1971. Albuquerque, New Mexico. 1971. 45 p. (N72-10076#; NASA-CR-122848)
176. SANDIA LABORATORIES, Planetary Quarantine Department. Twenty-third quarterly report of progress for period ending 31 December 1971. Albuquerque, New Mexico. 1971. 62 p.
177. SCHALKOWSKY, S. and R.C. Kline, Jr. Analytical basis for planetary quarantine. Environmental Biology and Medicine 1(1):9-26. 1971.
178. SCHNEIDER, H.W. and A.S. Irons. Spacecraft cleaning and decontamination techniques. IN: Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 26 p.
179. SHIMIZU, M. The upper atmosphere of Jupiter. Icarus 14(2):273-281. 1971.
180. SILVERMAN, G.J. Microbial survival in deep space environment. Environmental Biology and Medicine 1(1):83-97. 1971.
181. SIMKO, G.J., J.D. Devlin and M.D. Wardle. Dry-heat resistance of Bacillus subtilis var. niger spores on mated surfaces. Applied Microbiology 22(4):491-495. 1971.
182. SIVINSKI, H.D. and M.C. Reynolds. Synergistic characteristics of thermoradiation sterilization. SC-DC-71-4065. Sandia Laboratories. Presented at COSPAR, Seattle, as paper L.1.7. 1971. 23 p. (A71-33770#)

183. SMITH, G., I. Pflug, R. Gove and Y. Thun. Survival of microbial spores under several temperature and humidity conditions.
IN: Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. 1971. 6 p.
(N72-11075#; NASA-CR-123326)
184. STAVRO, W. and C. Gonzales. Planetary quarantine consideration for outer planet missions. Presented at the 17th Annual Meeting of the American Astronautical Society, Seattle. 1971. Preprint AAS-71-122. 22 p. (A71-37917#)
185. SWENSON, B.L. Spacecraft component survivability during entry into the Jovian atmosphere. Washington, D.C., National Aeronautics and Space Administration. 1971. 14 p.
(N71-23824#; NASA-TM-X-2276)
186. TAYLOR, D.M. and M. Knittel. Natural space environmental studies.
IN: Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 16 p.
187. TAYLOR, D.M. R.H. Green, D.S. Hess and J.W. Lucas. Planetary quarantine, semiannual review, space research and technology for the period July through December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 137 p.
188. TAYLOR, D.M. and R.C. Koukol. Spacecraft monitoring method and procedures. IN: Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 13 p.
189. TRUJILLO, R.E. The preparation and assay of T4 bacteriophage. Sandia Laboratories Report SC-RR-710107. Albuquerque, New Mexico, Sandia Laboratories. 1971. 18 p. (N71-20286#;
NASA-CR-117172)
190. ULRICH, J.A. Microbiology of surgery suites. IN: Proceedings of NASA Symposium on Clean Room Technology in Surgery Suites. Kansas City, Missouri, Midwest Research Institute. 1971. p. 11-28.
191. U.S. DEPARTMENT OF THE ARMY, Fort Detrick. Quarterly status report for the period of 1 November 1970 - 1 February 1971. 1 p.
192. VASHKOV, V.I. Modern methods and means of sterilization of spacecraft. IN: Imshenetsky, A.A., ed. Zhizn' vne Zemli i Metody yeye Obnaruzheniya (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. 207 p.
Washington, D.C., National Aeronautics and Space Administration. 1971. p. 207-219. (A71-28694#; NASA TT F-710)

193. VASHKOV, V.I., N.V. Rashkova and G.V. Shcheglova. Karantin planet: printsipy, metody i problemy (Principles, methods and problems [methods and means of sterilization of spacecraft]). Osnovy Kosmicheskoy Biologii i Meditsiny, chapter 4, vol. 1, part 3:3-156. 1970. Washington, D.C., National Aeronautics and Space Administration. (NASA TT F-13,769)
194. VDOVYKIN, G.P. Meteorites and life. IN: Imshenetsky, A.A., ed. Zhizn' vne Zemli i Metody yeye Obnaruzheniya (Extraterrestrial Life and its Detection Methods). Moscow, Izdatel'stvo Nauka. 1970. 207 p. Washington, D.C., National Aeronautics and Space Administration. 1971. p. 168-193. (A71-28692#; NASA TT F-710)
195. VESLEY, D. and I.J. Pflug. A review of naturally occurring interior microbial contamination of space hardware. IN: Environmental Microbiology as Related to Planetary Quarantine, Semiannual Progress Report 6. p. 41-51. Minneapolis, Minn., University of Minnesota. 1971. (N72-11075#; NASA-CR-123326)
196. WARDLE, M.D., W.A. Brewer and M.L. Peterson. Dry-heat resistance of bacterial spores recovered from Mariner-Mars 1969 space-craft. Applied Microbiology 21(5):827-831. 1971.
197. WARDLE, M.D. Studies of spacecraft sterilization parameters. IN: Planetary Quarantine, Semiannual Review, Space Research and Technology. 1 July - 31 December 1970. Document 900-484. Pasadena, Calif., Jet Propulsion Laboratory. 1971. 9 p.
198. WHITFIELD, W.J. and T. David. A study of the effects of relative humidity on small particle adhesion to surfaces. SC-RR-710721. Albuquerque, New Mexico, Sandia Laboratories. 1971. 28 p. (N72-10515#; NASA-CR-122849)
199. WOLFSON, R.P. and C.W. Craven. Contamination of planets by non-sterile flight hardware. Environmental Biology and Medicine 1(1):99-120. 1971.

~~PRECEDING PAGE BLANK NOT FILMED~~

AUTHOR INDEX

Abel, E.	78	Cook, A.M.	15
Abyzov, S.	153	Cornell, R.G.	42
Alg, R.L.	4,13	Craven, C.W.	199
Allander, C.	78	Cuddihy, E.F.	85
Augustin, J.A.L.	65		
Austin, P.R.	83		
		Daley, D.J.	121
		David, T.	198
Bacon, E.J.	106,107,108	Davies, R.W.	43
Bakanauskas, S.	3	Denny, C.B.	1
Ballard, D.W.	109	de Roos, R.	122
Barbeito, M.S.	4,13	Devlin, J.D.	181
Barrett, M.J.	84	Dillon, R.T.	123
Beakley, J.W.	40	Doyle, J.E.	56
Balikova, Ye. V.	91	Dugan, V.L.	64,124
Bellin, V.W.	86,89	Dynamic Science Corporation	31
Bisa, K.	82		
Bohrer, C.W.	1		
Bond, W.W.	110		
Bradley, F.D.	111		
Brannen, J.P.	112	Enlow, D.	94
Brewer, W.A.	196	Entrekin, V.K.	12
Brown, A.H.	41	Ernst, R.R.	56
Bruch, C.W.	29,92	Ervin, G.F.	120
Bruch, M.K.	90,92		
Bucher, K.	5		
Bucker, H.	93,113,114,149		
Bussolini, J.J.	30		
		Facius, R.	113
		Farmer, F.H.	125
Cameron, R.E.	14,115,116	Favero, M.S.	110,126,127, 128,129,130,157
Campbell, J.E.	117,118	Fedorova, R.I.	131
Chan, J.C.	79	Fooks, J.	57
Cheater, D.J.	119	Fort Detrick	191
Christensen, M.R.	120	Franklin, C.M.	64
Communicable Disease Center	27,28,38,39, 53,54,55,74	Fraser, S.J.	58,132,139
Conrow, H.P.	116	Fuller, H.V.	133
		Garst, D.M.	95,134

Giammanco, R.P.	23	Kalfayan, S.H.	86,89
Gonzales, C.C.	120,135,136,184	Kline, R.C. Jr.	177
Goppers, V.	96,97,137	Knittel, M.D.	156,157,186
Gordon, H.J.	24	Koch, E.	158
Gove, R.	99,104,165,183	Komolova, G.S.	91
Gradebusch, H.H.	79	Koukol, R.C.	120,188
Green, R.H.	120,132,138, 139,140,157,187	Kretz, A.P. Jr.	17
Greenspan, F.P.	2	Kuzyurina, L.A.	159
Gremillion, G.G.	9		
Gustan, E.A.	139,140,141		
		LeDoux, F.N.	45
Halbert, M.M.	105,166	Leone, J.E.	80
Hall, C.F.	98	Libby, W.F.	103
Hall, L.B.	143,148	Licciardello, J.J.	18
Hall, L.W.	142	Lindell, K.F.	95,134
Hanel, E. Jr.	6,9	Lucas, J.W.	187
Harris, G.J.	4,13	Lutwack, R.	87,160
Haynes, N.R.	24,59,148	Lyle, R.G.	142,161
Hedrick, T.I.	60	Lysenko, S.V.	32,152
Heldman, D.R.	60		
Henke, C.	105	Maki, S.	105,166,172
Hess, D.S.	187	Mansour, M.N.	120,163
Hoffman, A.R.	144,145, 146,147,148	Manufacturing Chemists Association	164
Holdridge, D.B.	123	Marshall, J.H.	110
Horneck, G.	93,113, 114,149	Mashburn, J.C.	40
Horowitz, N.H.	43,44,61,150	McDade, J.J.	64,81,162
Hueschen, R.M.	151	McMenamin, D.L.	119
Humphrey, A.E.	101	Meckler, M.	46
Imshenetsky, A.A.	32,152,153	Merek, E.L.	115
Irons, A.S.	154,178	Miles, J.R. Sr.	19
Irvine, L.A.	22	Moacanin, J.	85
Jacobson, N.F.	7	Moore, B.	99,165
Jacobson, R.	155	Morris, M.E.	63
Jet Propulsion Laboratory	16,33	NASA	8
Johnsen, M.A.	2	Naylor, F.S.	62
Johnston, W.E.	62	Negrey, J.T.	119
		Neumann, T.W.	34
		Nicholas, R.C.	65
		Nickerson, J.T.R.	18
		Nicks, O.W.	20,25
		Olson, R.L.	132,139,140,141

Oswalt, F.W.	64	Shcheglova, G.V.	193
Oxborrow, G.S.	123	Shimizu, M.	179
		Shull, J.J.	119
		Silver, P.E.	46
		Silver, R.H.	86, 89
Pace, V.A. Jr.	125	Silverman, G.J.	23, 180
Paulus, H.J.	137	Simko, G.J.	181
Petersen, N.J.	110	Sivinski, H.D.	182
Peterson, M.L.	196	Sliger, J.L.	121
Petras, E.	82	Smith, F.W.	90
Pflug, I.J.	65, 96, 97, 99, 100, 104, 105, 122, 155, 165, 166, 167, 168, 172, 183, 195	Smith, G.	104, 166, 172, 183
Pheil, C.G.	65	Sodek, B.	72
Phillips, G.B.	6, 9, 169	Space Science Board	37
Pierce, C.M.	10	Stavro, W.	120, 135, 184
Pisano, M.A.	35, 36, 47, 48, 66	Sternbach, E.M.	30
Portner, D.M.	21, 26	Strong, D.H.	75
Prokop, A.	101	Sunga, Fe C.A.	60
Puleo, J.R.	123	Swenson, B.L.	185
		Tarver, P.	73
Rashkova, N.V.	193	Taylor, D.M.	120, 125, 138, 139, 140, 156, 186, 187, 188
Redmond, J.C.	72	Thomas, C.	113
Reed, J.M.	1	Thun, Y.	99, 104, 165, 183
Reichert, R.J.	144, 145, 146, 148	Trexler, P.C.	2
Reyes, A.L.	170	Trujillo, R.E.	189
Reynolds, M.C.	171, 182	Tulis, J.J.	125
Reynolds, O.E.	20	Turcu, G.	113
Rider, T.H.	49		
Reimensnider, D.K.	67	Ulrich, J.A.	190
Roark, A.L.	171		
Roberto, T.L.	22	Vashkov, V.I.	192, 193
Roberts, T.A.	15	Vdovykin, G.P.	194
		Vesley, D.	105, 195
Sabel, F.L.	81	von Hartman, W.	87
Sagan, C.	102		
Salisbury, J.W.	50	Walmsley, D.E.	85
Sandberg, R.	172	Wardle, M.D.	154, 181, 196, 197
Sandia Laboratories	68, 69, 70, 173, 174, 175, 176	Weiss, K.F.	75
Saunders, J.F.	88	Werts, M.F.	111
Schalkowsky, S.	51, 52, 177	Whitfield, W.J.	40, 198
Schneider, H.W.	154, 178	Weiderkehr, R.	51, 52
Schwager, M.	113		
Seckbach, J.	103		

Willard, M. 11,12
Wolfson, R.P. 199
Wollenhaupt, H. 113,114,149
Woodall, L.J. 84

Yakshina, V.M. 159
Yegorov, I.A. 91

Zwerling, S. 76,77

PERMUTED TITLE INDEX

(aeolian erosion)Natural space environmental studies	186
aeolian erosion on microbial release from solids/Effects of	140
(aeolian erosion)Release of microorganisms from solid materials	141
aeolian erosion/The release of buried microbial contamination by	84
aerosol chambers with <u>Beta</u> -propiolactone/Disinfection of	4
aerosol chambers with <u>Beta</u> -propiolactone/Disinfection of microbi	13
aerosols/Peracetic acid	2
(amino acids)Meteorites and life	194
(analysis)A computerized program for statistical treatment of bi	171
(analysis)AEC/NASA symposium on contamination control; current a	71
(analysis)Data handling system	155
(analysis)Detection of low levels of microbial contamination on	137
analysis for an unmanned Mars orbiter/Planetary quarantine	148
analysis/Microbial	156
(analysis)Microbiological sampling of returned Surveyor III elec	157
analysis of contamination probability/Mariner Venus 67 - prelaun	59
analysis of spore inactivation in a composite heat and gamma rad	124
(analysis)Services provided in support of the planetary quaranti	127
Antarctic desert soil bacteria exposed to various temperatures a	116
Antarctic dry valleys/Growth of bacteria in soils from	115
(Apollo spacecraft)A computerized bacterial identification syste	123
"artificial Mars" chamber/Behavior of certain soil microorganis	159
aseptic maintenance by pressurization/A study of	119
assay of space hardware/Microbiological	126
assay of T4 bacteriophage/The preparation and	189
(assay)Planetary quarantine supporting activities	138
(assay)Relative frequency distribution of D _{125C} values for spore	110
(assemble)Checklist of good contamination control practices from	109
Assembly/sterilizer facility feasibility program final report	76
Assembly/sterilizer facility feasibility program final report	77
(atmosphere)A study of aseptic maintenance by pressurization	119
atmosphere of Jupiter/The upper	179
atmosphere on polymeric materials/Effects of simulated Venus	86
atmosphere/Simulation of the Venus	89
atmosphere/Spacecraft component survivability during entry into	185
automated biological laboratory, project definition/Study of the	34
automation/AEC/NASA symposium on contamination control; current	71
(A _w)Dry heat destruction of <u>B. subtilis</u> var. <u>niger</u> in a closed s	165
(A _w)Environmental microbiology as related to planetary quarantin	167
(A _w)Sterilization of space hardware	168
(A _w)Survival of microbial spores under several temperature and h	183

bacteria and bacteria spores/Observations regarding the steriliz	5
bacteria exposed to various temperatures and to three years of c	116
bacteria in soils from Antarctic dry valleys/Growth of	116
bacterial cells/Effects of simulated space vacuum on	113
bacterial contamination of space components/Laboratory for monit	27
bacterial identification system as applied to planetary quaranti	123
bacterial spores recovered from Mariner-Mars 1969 spacecraft/Dry	196
bacterial spores/Studies with a simulated Martian environment	22
bacterial spores under some simulated lunar conditions/Survival	149
bacterial thermal death time curves/Some observations on	18
bacteriophage/The preparation and assay of T4	189
battery development/Heat-sterilizable	87
battery separators/Investigations on sterilizable	85
<u>Beta</u> -propiolactone/Disinfection of aerosol chambers with	4
<u>Beta</u> -propiolactone/Disinfection of microbial aerosol chambers wi	13
(<u>Beta</u> -propiolactone)Sterilization of space hardware	168
(bibliographies)Planetary quarantine: principles, methods and p	143
Bibliography of lunar and planetary research, 1960-1964	50
(bibliography)Sterilization handbook	31
(bibliography)Surveyor sterilization. Part II. A literature re	12
bibliography/The use of ethylene oxide: a partially annotated	10
(bioassay)Assembly/sterilizer facility feasibility program final	76
(bioassay)Assembly/sterilizer facility feasibility program final	77
(bioburden)Analytical basis for planetary quarantine	177
(bioburden)Biological decontamination of a spacecraft system	45
(bioburden)Ecology and thermal inactivation of microbes in and o	117
(bioburden)Estimation of particulate loads on components of devi	122
(bioburden)Mariner Mars 1971 post-launch analysis of compliance	145
(bioburden)Planetary quarantine supporting activities	138
(bioburden)Planning, evaluation and analytical studies to implem	106
(bioburden)Planning, evaluation and analytical studies to implem	107
(bioburden)Planning, evaluation and analytical studies to implem	108
(bioburden)Post launch recontamination studies	163
(bioburden)Proceedings of the meeting on problems and techniques	8
(bioburden)Reduction of microbiological shedding in clean rooms	90
(bioburden)Spacecraft cleaning and decontamination techniques	178
(bioburden)Spacecraft monitoring method and procedures	188
(bioburden)Spacecraft sterilization	44
(bioburden)The operations problem of sterilization	7
bioclean facilities are needed for spacecraft sterilization/Inte	46
(biodetection grinder)Release of microorganisms from solid mater	141
(biodetection grinder)Services provided in support of the planet	128
(biodetection grinder)Services provided in support of the planet	129
(biodetection grinder)Services provided in support of the planet	130
(bioinstrumentation)Study of the automated biological laboratory	34
(bioinstrumentation)The vacuum probe for removing organisms for	63
biological cabinet/Microbiological studies on the performance of	81
Biological decontamination of a spacecraft system	45
biological laboratory, project definition/Study of the automated	34
biology of Mars/The surface environment and possible	102

(BISS)Design and development of a bio-isolator suit system	151
<u>B. subtilis</u> spores/Gamma irradiation of	15
(<u>B. subtilis</u> var. <u>niger</u>)Ecology and thermal inactivation of micr	170
<u>B. subtilis</u> var. <u>niger</u> in a closed system: A. Thermal destruci	99
<u>B. subtilis</u> var. <u>niger</u> in a closed system: B. Measurement of wa	97
<u>B. subtilis</u> var. <u>niger</u> in a closed system/Dry heat destruction r	165
<u>B. subtilis</u> var. <u>niger</u> spores occluded in water-insoluble crysta	56
<u>B. subtilis</u> var. <u>niger</u> spores on mated surfaces/Dry-heat resista	181
(buried contamination)AEC/NASA symposium on contamination contro	71
(buried contamination)Conference on hazard of planetary contamin	37
(buried contamination)Dry heat destruction of <u>B. subtilis</u> var. <u>n</u>	165
(buried contamination)Effects of aeolian erosion on microbial re	140
(buried contamination)Natural space environmental studies	186
(buried contamination)Release of microorganisms from solid mater	141
(buried contamination)Services provided in support of the planet	38
(buried contamination)Services provided in support of the planet	39
(buried contamination)Services provided in support of the planet	74
(buried contamination)Services provided in support of the planet	127
(buried contamination)Services provided in support of the planet	128
(buried contamination)Services provided in support of the planet	130
(buried contamination)Spacecraft sterilization	44
(buried contamination)The survival and release of viable microor	58
buried microbial contamination by aeolian erosion/The release of	,84
cabling/Microbiological sampling of returned Surveyor III electr	157
capsule development program/Lunar rough landing	16
carbon dioxide mixtures on bacteria and bacteria spores/Observat	5
(celestial bodies)Foundations of planetary quarantine	142
(celestial bodies)Possibility of the spreading of viable germs i	131
(chemical)An investigation of a sono-chemical approach in steril	47
(chemical)An investigation of a sono-chemical approach in steril	48
chemical approaches/Detection of low levels of microbial contami	96
chemical approaches/Detection of low levels of microbial contami	137
(chemical)Disinfection of aerosol chambers with <u>Beta</u> -propiolacto	4
(chemical)Disinfection of microbial aerosol chambers with <u>Beta</u> -p	13
(chemical)Effect of various gas atmospheres on destruction of mi	65
(chemical)Effects of simulated Venus atmosphere on polymeric mat	86
(chemical gases)Principles, methods and problems [methods and me	193
(chemical)Heat-sterilizable battery development	87
(chemical)Investigations on sterilizable battery separators	85
(chemical)Kinetics of disinfection	101
(chemical)Observations regarding the sterilizing effect of ethyl	5
(chemical)Peracetic acid aerosols	2
(chemical)Practical procedures for microbial decontamination	9
(chemical)Properties and essential information for safe handling	164
(chemical)Resistance of <u>B. subtilis</u> var. <u>niger</u> spores occluded i	56
(chemical)Review of the possible existence of a Jovian atmospher	72
(chemical)The use of ethylene oxide: a partially annotated bibl	10

(chemical)Virucidal properties of dimethyl sulfoxide	79
(chemicals)Modern methods and means of sterilization of spacecra	192
(clean room)Checklist of good contamination control practices fr	109
(clean room)Comparative studies of conceptual design and qualifi	49
(clean room)Microbiology of surgery suites	190
Clean room personnel	83
(clean room)Services provided in support of the planetary quaran	54
(clean room)Services provided in support of the planetary quaran	55
clean room when occupied by operating personnel/Microbial contam	26
clean rooms/Estimation of particulate loads on components of dev	122
clean rooms/Investigation of a new ventilating system for	78
clean rooms/Reduction of microbiological shedding in	90
closed system: A. Thermal destruction studies/Dry heat destruct	99
closed system: B. Measurement of water/Dry heat destruction rat	97
<u>Clostridium perfringens.</u> I. Heat resistance and toxigenicity/S	75
component sterilization-reliability effects/An integrated test p	30
component survivability during entry into the Jovian atmosphere/	185
(components)Biological decontamination of a spacecraft system	45
(components)Checklist of good contamination control practices fr	109
components/Ecology and thermal inactivation of microbes in and o	117
components/Ecology and thermal inactivation of microbes in and o	118
(components)Heat-sterilizable battery development	87
(components)Heat sterilizable separators	160
(components)Investigations on sterilizable battery separators	85
components/Laboratory for monitoring bacterial contamination of	27
components of devices manufactured in clean rooms/Estimation of	122
components/Surveyor sterilization. Part II. A literature revie	12
components with ethylene oxide-Freon 12 and heat/Surveyor steril	11
computerized bacterial identification system as applied to plane	123
constraints/Flight path and mission strategies to satisfy outer	135
constraints for advanced missions/Planetary quarantine	136
(constraints)Mariner Mars 1971 planetary quarantine plan	144
(constraints)Mariner Venus 67 - prelaunch analysis of contaminat	59
(constraints)Planetary quarantine consideration for outer planet	184
(constraints)Planetary quarantine plan, Voyager project	73
(constraints)Sterilization techniques	154
contaminants/The special problem of encapsulated	41
contamination/Back	169
contamination by aeolian erosion/The release of buried microbial	84
Contamination control	120
contamination control; current and advanced concepts in instrume	71
contamination/Control of microbial	162
contamination control practices from a manufacturing viewpoint/C	109
contamination in a clean room when occupied by operating personn	26
contamination in the interior of spacecraft components/Conferenc	37
(contamination)Laboratory evaluation of the plastic vacuum probe	125
(contamination logs)Planning, evaluation and analytical studies	106
(contamination logs)Planning, evaluation and analytical studies	107
(contamination logs)Planning, evaluation and analytical studies	108
Contamination of planets by nonsterile flight hardware	199

contamination on surfaces by chemical approaches/Detection of lo	96
contamination on surfaces by chemical approaches/Detection of lo	137
contamination probability/Mariner Venus 67 - prelaunch analysis	59
(COSPAR)Spacecraft sterilization and planetary quarantine, backg	57
cryobiologist's conjecture of planetary life/A	88
(cryogenics)Influence of a set of extremal factors on biological	91
data/A computerized program for statistical treatment of biologi	171
Data handling system	155
(data)Properties and essential information for safe handling and	164
Decontamination and sterilization of lunar and planetary spacecr	20
decontamination and sterilization of spacecraft/Proceedings of m	8
(decontamination)Back contamination	169
(decontamination)Disinfection of aerosol chambers with <u>Beta</u> -prop	4
(decontamination)Disinfection of microbial aerosol chambers with	13
decontamination of a spacecraft system/Biological	45
decontamination of spacecraft/Development of parametric data for	121
decontamination/Practical procedures for microbial	9
(decontamination)Spacecraft sterilization requirements	42
(decontamination)Sterilization techniques	154
decontamination techniques/Spacecraft cleaning and	178
(decontamination)Use of ultraviolet radiation in microbiological	6
Deposition of nutrients to surfaces by Rodac plates	40
(design)A description of the model assembly sterilizer for testi	133
Design and development of a bio-isolator suit system (BISS)	151
design and qualification procedures for a Mars probe-lander/Comp	49
(design)Assembly/sterilizer facility feasibility program final r	77
(design)Contamination of planets by nonsterile flight hardware	199
design evaluation models of bioclean facilities are needed for s	46
(design)Laboratory evaluation of the plastic vacuum probe surfac	125
(design)Microbiological studies on the performance of a laminar	81
design of unmanned spacecraft for planetary and interplanetary e	19
(design)Planetary quarantine: Recontamination phase	94
(design)Study of the automated biological laboratory, project de	34
destruction of microorganisms in dry heat/Effect of various gas	65
destruction rate of <u>B. subtilis</u> var. <u>niger</u> in a closed system/Dr	165
destruction rates of <u>B. subtilis</u> var. <u>niger</u> in a closed system:	99
destruction rates of <u>B. subtilis</u> var. <u>niger</u> in a closed system:	97
destruction rates of microorganisms on surfaces/Dry heat	105
destruction rates of microorganisms on surfaces/Dry heat	166
destruction studies/Dry heat destruction rates of <u>B. subtilis</u> /va	99
(dimethyl sulfoxide)Sterilization of space hardware	168
dimethyl sulfoxide/Virucidal properties of	79
disinfection/Kinetics of	101
Disinfection of aerosol chambers with <u>Beta</u> -propiolactone	4
Disinfection of microbial aerosol chambers with <u>Beta</u> -propiolacto	13
(dissolution)Services provided in support of the planetary quara	53
(dissolution)Services provided in support of the planetary quara	54

(dissolution)Services provided in support of the planetary quara	55
(dry heat)A kinetic analysis of spore inactivation in a composit	124
(dry heat)A precisely controlled, low range humidity system	95
(dry heat)Control of microbial contamination	162
Dry heat destruction rate of <u>B. subtilis</u> var. <u>niger</u> in a closed	165
Dry heat destruction rates of <u>B. subtilis</u> var. <u>niger</u> in a closed	99
Dry heat destruction rates of <u>B. subtilis</u> var. <u>niger</u> in a closed	97
Dry heat destruction rates of microorganisms on surfaces	105
Dry heat destruction rates of microorganisms on surfaces	166
dry heat/Effect of various gas atmosphere on destruction of micr	65
(dry heat)Environmental microbiology as related to planetary qua	100
(dry heat)Experimental study of sterile assembly techniques	33
(dry heat)Kinetics of disinfection	101
(dry heat)Microbiological assay of space hardware	126
(dry heat)Modern methods and means of sterilization of spacecraf	192
(dry heat)Relative frequency distribution of D _{125°C} values for sp	110
Dry-heat resistance of bacterial spores recovered from Mariner-M	196
(dry heat)Resistance of <u>B. subtilis</u> var. <u>niger</u> spores occluded i	56
Dry-heat resistance of <u>B. subtilis</u> var. <u>niger</u> spores on mated su	181
dry heat resistance of naturally occurring organisms widely disp	134
(dry heat)Services provided in support of the planetary quaranti	55
(dry heat)Services provided in support of the planetary quaranti	128
Dry-heat sterilization for planetary-impacting spacecraft	29
dry-heat sterilization of microorganisms/Role of water activity	112
(dry heat)Sterilization of space hardware	168
(dry heat)Sterilization techniques	154
(dry-heat)Studies of spacecraft sterilization parameters	197
(dry heat)The special problem of encapsulated contaminants	41
D _{125°C} values for spore isolates' from the Mariner-Mars 1969 spac	110
(D _{125°C} values)Services provided in support of the planetary qua	127
(D-value)Analytical basis for planetary quarantine	177
(D-value)Dry heat destruction rates of microorganisms on surface	105
(D-value)Dry-heat sterilization for planetary-impacting spacecra	29
(D-value)Environmental microbiology as related to planetary quar	100
(D-value)Environmental microbiology as related to planetary quar	167
(D-value)Inactivation and division delay of <u>E. coli</u> B/r by combi	114
(D-value)Services provided in support of the planetary quarantin	55
(D-value)Services provided in support of the planetary quarantin	74
(D-value)Services provided in support of the planetary quarantin	128
(D-value)Some observations on bacterial thermal death time curve	18
(D-value)Some properties of heat-resistant and heat-sensitive st	75
(D-value)Sterilization of space hardware	168
(D-value)Synergistic characteristics of thermoradiation steriliz	182

<u>E. coli</u> B/r by combined treatment with UV and vacuum/Inactivatio	114
Ecology and thermal inactivation of microbes in and on interplan	117
Ecology and thermal inactivation of microbes in and on interplan	118
Ecology and thermal inactivation of microbes in and on interplan	170

encapsulated contaminants/The special problem of	41
(environment)A computerized program for statistical treatment of	171
(environment)A cryobiologist's conjecture of planetary life	88
environment/A kinetic analysis of spore inactivation in a compos	124
(environment)Analytical basis for planetary quarantine	177
environment and possible biology of Mars/The surface	102
(environment)Behavior of certain soil microorganisms in the "art	159
(environment)Deposition of nutrients to surfaces by Rodac plates	40
(environment)Effects of simulated Venus atmosphere on polymeric	86
environment. Germination and growth of bacterial spores/Studies	22
(environment)Microbial analysis	156
(environment)Microbial release from solids after simulated hard	132
environment/Microbial survival in deep space	180
(environment)Microbiological sampling of returned Surveyor III e	157
(environment)Planetary quarantine constraints for advanced missi	136
(environment)Possibility of the spreading of viable germs in out	131
(environment)Post-launch recontamination studies	163
(environment)Review of the possible existence of a Jovian atmosp	72
(environment)Simulation of the Venus atmosphere	89
(environment)Sterilization of spacecraft	153
environment/Survival of microorganisms in a simulated Martian	139
(environment)Terrestrial organisms survive in simulated Jupiter	158
(environment)The search for life on Mars - where we stand today	150
(environment)The role of soil science in space exploration	14
(environment)The upper atmosphere of Jupiter	179
(environment)Ultra-high vacuum and microorganisms	32
environmental conditions of ionosphere and stratosphere/Survival	82
Environmental microbiology as related to planetary quarantine	100
Environmental microbiology as related to planetary quarantine	167
environmental studies/Natural space	186
(equipment)An improved sonification method for removal of microo	64
(equipment)An investigation of a sono-chemical approach in steri	66
(equipment)A precisely controlled, low range humidity system	95
(equipment)A study of aseptic maintenance by pressurization	119
(equipment)Detection of low levels of microbial contamination on	137
(equipment)Development of parametric data for the estableissement	121
(equipment)Disinfection of microbial aerosol chambers with <u>Beta-</u>	13
(equipment)Heat-sterilizable battery development	87
(equipment)Interdisciplinary design evaluation models of bioclea	46
(equipment)Investigations on sterilizable battery separators	85
(equipment)Laboratory evaluation of the plastic vacuum probe sur	125
(equipment)Microbiological studies on the performance of a lamin	81
(equipment)Reduction of microbial shedding from humans	67
(equipment)Survival of microorganisms in a simulated Martian env	139
(ethylene oxide)An investigation of a sono-chemical approach in	35
(ethylene oxide)An investigation of a sono-chemical approach in	36
(ethylene oxide)An investigation of a sono-chemical approach in	47
ethylene oxide-carbon dioxide mixtures on bacteria and bacteria	5
(ethylene oxide)Comparative studies of conceptual design and qua	49
ethylene oxide for sterilization: a partially annotated bibliog	10

ethylene oxide-Freon 12 and heat/Surveyor sterilization. Part I	11
ethylene oxide-Freon 12 and its compatibility with materials and	12
ethylene oxide/Properties and essential information for safe han	164
(ethylene oxide)Resistance of <u>B. subtilis</u> var. <u>niger</u> spores occl	56
(ethylene oxide)Services provided in support of the planetary qu	54
(ethylene oxide)Spacecraft sterilization	44
(ethylene oxide)Sterilization of space hardware	168
ETO cycle for decontamination of spacecraft/Development of param	121
extremal factors on biologically active substances/Influence of	91
(filters)Outlines for state-of-the-art documents to be prepared	161
(filters)Reduction of microbiological shedding in clean rooms	90
Gamma irradiation of <u>B. subtilis</u> spores	15
gamma radiation environment/A kinetic analysis of spore inactiva	124
gamma sterilization/Investigation of	1
gas atmospheres on destruction of microorganisms in dry heat/Eff	65
Germination and growth of bacterial spores/Studies with a simula	22
(growth)Effects of simulated space vacuum on bacterial cells	113
(growth)Inactivation and division delay of <u>E. coli</u> <u>B/r</u> by combin	114
Growth of bacteria in soils from Antarctic dry valleys	115
(growth)Services provided in support of the planetary quarantine	130
handbook/Sterilization	31
hardware/A review of naturally occurring interior microbial cont	195
(hardware)Assembly/sterilizer facility feasibility program final	76
hardware/Contamination of planets by nonsterile flight	199
(hardware)Control of microbial contamination	162
(hardware)Disinfection of aerosol chambers with <u>Beta</u> -propiolacto	4
hardware/Microbiological assay of space	126
hardware/Sterilization of space	168
(hardware)Studies of spacecraft sterilization parameters	197
heat and gamma radiation environment/A kinetic analysis of spor	124
(heat)Gamma irradiation of <u>B. subtilis</u> spores	15
(heat)Practical procedures for microbial decontamination	9
heat resistance and toxigenicity/Some properties of heat-resista	75
(heat resistance)Services provided in support of the planetary q	129
(heat resistance)Services provided in support of the planetary q	130
heat-resistant and heat-sensitive strains of <u>Clostridium perfrin</u>	75
heat-sensitive strains of <u>Clostridium perfringens</u> . I. Heat res	75
(heat)Spacecraft sterilization - implications and suggestions	43
Heat-sterilizable battery development	87
Heat sterilizable separators	160
heat sterilization for planetary-impacting spacecraft/Dry	29

heat sterilization/Log-normal model for microbial survival in heat/Surveyor sterilization. Part III. Further compatibility s	51
heat to sterilize resins/Use of sporicides and	11
high vacuum on microorganisms/Effect of a	21
high vacuums/Resistance of microorganisms to	152
High vacuum sterilization conversion	3
humidity conditions/Survival of microbial spores under several t	17
humidity conditions/Survival of microbial spores under several t	104
(humidity)Ecology and thermal inactivation of microbes in and on	183
(humidity)Resistance of <u>B. subtilis</u> var. <u>niger</u> spores occluded i	118
humidity system/A precisely controlled, low range	56
	95
(identification)Data handling system	155
(identification)Planetary quarantine supporting activities	138
identification system as applied to planetary quarantine/A compu	123
impact/The survival and release of viable microorganisms from a	58
Inactivation and division delay of <u>E. coli</u> <u>B/r</u> by combined treat	114
(inactivation)A precisely controlled, low range humidity system	95
inactivation in a composite heat and gamma radiation environment	124
inactivation of microbes in and on interplanetary space vehicle	118
inactivation of microbes in and on interplanetary space vehicle	170
(inactivation)Synergistic characteristics of thermoradiation ste	182
instrumentation and automation/AEC/NASA symposium on contaminati	71
interplanetary exploration/Problems in the design of unmanned spa	19
interplanetary space vehicle components/Ecology and thermal inac	117
interplanetary space vehicle components/Ecology and thermal inac	118
ionosphere and stratosphere/Survival chances of microorganisms u	82
Jovian atmosphere/Review of the possible existence of a	72
Jovian atmosphere/Spacecraft component survivability during entr	185
Jupiter atmosphere/Terrestrial organisms survive in a simulated	158
(Jupiter)Flight path and mission strategies to satisfy outer pla	135
(Jupiter)Pioneer program. Pioneer F/G planetary quarantine plan	98
Jupiter/The upper atmosphere of	179
kinetic analysis of spore inactivation in a composite heat and g	124
(kinetic)Role of water activity in dry heat sterilization of mic	112
Kinetics of disinfection	101
laminar airflow biological cabinet/Microbiological studies on th	81
(laminar airflow)Investigation of a new ventilating system for c	78
lunar and planetary research, 1960-1964/Bibliography of	50

lunar and planetary spacecraft/Decontamination and sterilization	20
(lunar environment)Survival of bacterial spores under some simul	149
Lunar rough landing capsule development program	16
lunar surface conditions/Survival of bacterial spores under some	149
Mariner 1964 mission/A study of the probability of depositing vi	24
Mariner-Mars 1969 spacecraft/Dry-heat resistance of bacterial sp	196
Mariner-Mars 1969 spacecraft/Relative frequency distribution of	110
Mariner-Mars 1971 planetary quarantine plan	144
Mariner-Mars 1971 post-launch analysis of compliance with planet	145
Mariner-Mars 1971 prelaunch analysis of probability of planetary	146
Mariner Venus 67 - prelaunch analysis of contamination probabili	59
(Mars)Conference on hazard of planetary contamination due to mic	37
Mars during the Mariner 1964 mission/A study of the probability	24
(Mars)Growth of bacteria in soils from Antarctic dry valleys	115
(Mars)Influence of a set of extremal factors on biologically act	91
Mars/Microorganisms on	61
Mars orbiter/Planetary quarantine analysis for an unmanned	148
Mars probe-lander/Comparative studies of conceptual design and q	49
(Mars)Spacecraft sterilization - implications and suggestions	43
Mars spacecraft/Sterilization of	25
(Mars)Study of the automated biological laboratory, project defi	34
(Mars)Survival of Antarctic desert soil bacteria exposed to vari	116
Mars/The surface environment and possible biology of	102
Mars - where we stand today/The search for life on	150
Martian environment. Germination and growth of bacterial spores	22
Martian environment/Survival of microorganisms in a simulated	139
mated surfaces/Dry-heat resistance of <u>B. subtilis</u> var. <u>niger</u> spo	181
(mathematical model)Mariner-Mars 1971 prelaunch analysis of prob	146
Measurement of water/Dry heat destruction rates of <u>B. subtilis</u> v	97
Meteorites and life	194
microbes in and on interplanetary space vehicle components/Ecolo	117
microbes in and on interplanetary space vehicle components/Ecolo	118
microbes in and on interplanetary space vehicle components/Ecolo	170
microbial aerosol chambers with <u>Beta</u> -propiolactone/Disinfection	13
Microbial analysis	156
Microbial burden prediction model	147
microbial contamination/Control of	162
Microbial contamination in a clean room when occupied by operati	26
microbial contamination of space hardware/A review of naturally	195
microbial contamination on surfaces by chemical approaches/Detec	96
microbial contamination on surfaces by chemical approaches/Detec	137
Microbial release from solids after simulated hard landings	132
microbial release from solids/Effects of aeolian erosion on	140
microbial shedding from humans/Reduction of	67
microbial spores under several temperature and humidity conditio	104
microbial spores under several temperature and humidity conditio	183
Microbial survival in deep space environment	180

microbial survival in heat sterilization/Log-normal model for	51
Microbiological assay of space hardware	126
microbiological contamination in the interior of spacecraft comp	37
microbiological laboratories/Use of ultraviolet radiation in	6
Microbiological sampling of returned Surveyor III electrical cab	157
microbiological shedding in clean rooms/Reduction of	90
Microbiological studies on the performance of a laminar airflow	81
microbiology as related to planetary quarantine/Environmental	100
microbiology as related to planetary quarantine/Environmental	167
Microbiology of surgery suites	190
Microorganism shedding by human beings	60
(microorganisms)A cryobiologist's conjecture of planetary life	88
(microorganisms)An investigation of a sono-chemical approach in	35
(microorganisms)A precisely controlled, low range humidity syste	95
(microorganisms)Back contamination	169
(microorganisms)Deposition of nutrients to surfaces by Rodac pla	40
microorganisms/Effect of a high vacuum on	152
(microorganisms)Environmental microbiology as related to planeta	167
microorganisms from solid materials/Release of	141
microorganisms and surfaces/An improved sonification method for	64
microorganisms in a simulated Martian environment/Survival of	139
microorganisms in dry heat/Effect of various gas atmospheres on	65
microorganisms in simulated space/Study of viability of	23
microorganisms in the "artificial Mars" chamber/Behavior of cert	159
Microorganisms on Mars	61
microorganisms on surfaces/Dry heat destruction rates of	105
microorganisms on surfaces/Dry heat destruction rates of	166
(microorganisms)Practical procedures for microbial decontaminatio	9
(microorganisms)Relative frequency distribution of D _{1250C} values	110
microorganisms/Role of water activity in dry heat sterilization	112
(microorganisms)Spacecraft sterilization - implications and sugg	43
(microorganisms)Sterilization of spacecraft	153
(microorganisms)Studies of spacecraft sterilization parameters	197
microorganisms/The thermal radiative characteristics of viable	80
microorganisms to high vacuum/Resistance of	3
microorganisms/Ultra-high vacuum and	32
microorganisms under simulated space conditions/Survival of	93
microorganisms under the environmental conditions of ionosphere	82
model assembly sterilizer for testing (MAST)/A description of th	133
model/A stochastic sterilization	52
model for microbial survival in heat sterilization/Log-normal	51
model/Microbial burden prediction	147
models of bioclean facilities are needed for spacecraft steriliz	46
(NASA policies)Decontamination and sterilization of lunar and pl	20
nutrients to surfaces by Rodac plates/Deposition of	40

organisms for counting/The vacuum probe for removing	63
organisms on Mars during the Mariner 1964 mission/A study of the	24
organisms survive in simulated Jupiter atmosphere/Terrestrial	158
organisms widely dispersed on a surface/A study of the dry heat	134
outer planet missions/Planetary quarantine consideration for	184
outer planet quarantine constraints/Flight path and mission stra	135
(outer planets)Bibliography of lunar and planetary research, 196	50
(outer planets)Planetary quarantine constraints for advanced mis	136
(panspermia)Meteorites and life	194
parametric data for the establishment of an ETO cycle for decont	121
particle adhesion to surfaces/A study of the effects of relative	198
(particulate)Dry heat destruction rates of microorganisms on sur	166
(particulate)Investigation of a new ventilating system for clean	78
particulate loads on components of devices manufactured in clean	122
(particulate)Microorganism shedding by human beings	60
(particulate)Planetary quarantine supporting activities	138
(particulate)Possibility of the spreading of viable germs in out	131
(particulate)Post-launch recontamination studies	163
(particulate)Reduction of microbiological shedding in clean room	90
(particulate)The thermal radiative characteristics of viable mic	80
(particulates)A study of the dry heat resistance of naturally oc	134
Peracetic acid aerosols	2
personnel/Clean room	83
personnel/Microbial contamination in a clean room when occupied	26
Pioneer F/G planetary quarantine plan/Pioneer program	98
Pioneer program. Pioneer F/G planetary quarantine plan	98
planetary and interplanetary exploration/Problems in the design	19
planetary contamination due to microbiological contamination in	37
planetary-impacting spacecraft/Dry-heat sterilization for	29
planetary life/A cryobiologist's conjecture of	88
planetary quarantine/A computerized bacterial identification sys	123
Planetary quarantine analysis for an unmanned Mars orbiter	148
planetary quarantine/Analytical basis for	177
planetary quarantine, background of the sterilization requiremen	57
Planetary quarantine consideration for outer planet missions	184
Planetary quarantine constraints for advanced missions	136
(planetary quarantine)Contamination control	120
planetary quarantine/Environmental microbiology as related to	100
planetary quarantine/Environmental microbiology as related to	167
planetary quarantine/Foundations of	142
planetary quarantine plan/Mariner-Mars 1971	144
planetary quarantine plan/Pioneer program. Pioneer F/G	98
Planetary quarantine plan, Voyager project	73
Planetary quarantine: principles, methods and problems	143
Planetary quarantine: Recontamination phase	94
planetary quarantine requirements/Mariner-Mars 1971 post-launch	145
planetary quarantine requirements of NASA/Services provided in s	38

planetary quarantine requirements of NASA/Services provided in s	39
planetary quarantine requirements of NASA/Services provided in s	53
planetary quarantine requirements of NASA/Services provided in s	54
planetary quarantine requirements of NASA/Services provided in s	55
planetary quarantine requirements of NASA/Services provided in s	74
planetary quarantine requirements of NASA/Services provided in s	127
planetary quarantine requirements of NASA/Services provided in s	128
planetary quarantine requirements of NASA/Services provided in s	129
planetary quarantine requirements of NASA/Services provided in s	130
planetary quarantine requirements/Planning, evaluation and analy	106
planetary quarantine requirements/Planning, evaluation and analy	107
planetary quarantine requirements/Planning, evaluation and analy	108
planetary quarantine/Scientific publications and presentations r	111
Planetary quarantine supporting activities	138
planetary research, 1960-1964/Bibliography of lunar and	50
planetary spacecraft/Decontamination and sterilization of lunar	20
planets by nonsterile flight hardware/Contamination of	199
(Pluto)Flight path and mission strategies to satisfy outer plane	135
(policies)Mariner-Mars 1971 planetary quarantine plan	144
Polymeric materials/Effects of simulated Venus atmosphere on	86
Post-launch recontamination studies	163
Practical procedures for microbial decontamination	9
prelaunch analysis of contamination probability/Mariner Venus 67	59
pressurization/A study of aseptic maintenance by	119
Principles, methods and problems [methods and means of steriliza	193
principles, methods and problems/Planetary quarantine	143
(probability)Log-normal model for microbial survival in heat ste	51
(probability of contamination)Analytical basis for planetary qua	177
(probability of contamination)A stochastic sterilization model	52
(probability of contamination)A study of aseptic maintenance by	119
(probability of contamination)Contamination control	120
(probability of contamination)Effects of aeolian erosion on micr	140
(probability of contamination)Foundations of planetary quarantin	142
(probability of contamination)Mariner-Mars 1971 planetary quaran	144
(probability of contamination)Mariner-Mars 1971 post-launch anal	145
(probability of contamination)Microbial analysis	156
(probability of contamination)Pioneer program. Pioneer F/G plan	98
(probability of contamination)Planetary quarantine analysis for	148
(probability of contamination)Planetary quarantine consideration	184
(probability of contamination)Planetary quarantine constraints f	136
(probability of contamination)Planning, evaluation and analytica	106
(probability of contamination)Planning, evaluation and analytica	107
(probability of contamination)Planning, evaluation and analytica	108
(probability of contamination)Spacecraft sterilization requireme	42
(probability of contamination)The release of microbial contamina	84
(probability of contamination)The thermal radiative characterist	80
probability of depositing viable organisms on Mars during the Ma	24
(probability of growth)Natural space environmental studies	186
probability of planetary contamination/Mariner-Mars 1971 prelaun	146
probe for removing organisms for counting/The vacuum	63

quarantine constraints/Flight path and mission strategies to sat	135
radiation environment/A kinetic analysis of spore inactivation i	124
(radiation)Gamma irradiation of <u>Bacillus subtilis</u> spores	15
radiation in microbiological laboratories/Use of ultraviolet	6
(radiation)Investigation of gamma sterilization	1
(radiation)Practical procedures for microbial decontamination	9
(radiation)Ultra-high vacuum and microorganisms	32
radiative characteristics of viable microorganisms/The thermal	80
Recontamination phase/Planetary quarantine:	94
recontamination studies/Post-launch	163
(relative humidity)Development of parametric data for the establ	121
(relative humidity)Environmental microbiology as related to plan	100
(relative humidity)Kinetics of disinfection	101
relative humidity on small particle adhesion to surfaces/A study	198
reliability effects/An integrated test program for determining c	30
(requirements)A stochastic sterilization model	52
requirements/Mariner-Mars 1971 post-launch analysis of complianc	145
requirements of NASA/Services provided in support of the planeta	38
requirements of NASA/Services provided in support of the planeta	39
requirements of NASA/Services provided in support of the planeta	53
requirements of NASA/Services provided in support of the planeta	54
requirements of NASA/Services provided in support of the planeta	55
requirements of NASA/Services provided in support of the planeta	74
requirements of NASA/Services provided in support of the planeta	127
requirements of NASA/Services provided in support of the planeta	128
requirements of NASA/Services provided in support of the planeta	129
requirements of NASA/Services provided in support of the planeta	130
(requirements)Pioneer program. Pioneer F/G planetary quarantine	98
(requirements)Planetary quarantine plan, Voyager project	73
requirements/Planning, evaluation and analytical studies to impl	106
requirements/Planning, evaluation and analytical studies to impl	107
requirements/Planning, evaluation and analytical studies to impl	108
requirements/Spacecraft sterilization	42
requirements/Spacecraft sterilization and planetary quarantine,	57
(requirements)The operations problem of sterilization	7
(requirements)The special problem of encapsulated contaminants	41
resins/Use of sporicides and heat to sterilize	21
resistance of bacterial spores recovered from Mariner-Mars 1969	196
Resistance of <u>B. subtilis</u> var. <u>niger</u> spores occluded in water-in	56
resistance of <u>B. subtilis</u> var. <u>niger</u> spores on mated surfaces/Dr	181
Resistance of microorganisms to high vacuums	3
resistance of naturally occurring organisms widely dispersed on	134
Rodac plates/Deposition of nutrients to surfaces by	40

sampler/Laboratory evaluation of the plastic vacuum probe surface	125
(sampling)A computerized bacterial identification system as applied	123
(sampling)An improved sonification method for removal of microorganisms	64
(sampling)Laboratory for monitoring bacterial contamination of surfaces	27
(sampling)Microbiology of surgery suites	190
(sampling)Reduction of microbial shedding from humans	67
(sampling)Spacecraft monitoring method and procedures	188
(Saturn)Flight path and mission strategies to satisfy outer planetary	135
(sensitivity)Effects of simulated space vacuum on bacterial cell	113
(sensitivity)Inactivation and division delay of <u>E. coli</u> B/r by centrifuge	114
separators/Heat sterilizable	160
shedding by human beings/Microorganism	60
shedding in clean rooms/Reduction of microbiological	90
simulated hard landings.Microbial release from solids after	132
simulated Jupiter atmosphere/Terrestrial organisms survive in	158
simulated lunar surface conditions/Survival of bacterial spores	149
simulated Martian environment. Germination and growth of bacteria	22
simulated Martian environment/Survival of microorganisms in a	139
simulated space conditions.Survival of microorganisms under	93
simulated space/Study of viability of microorganisms in	23
simulated space vacuum on bacterial cells/Effects of	113
simulated Venus atmosphere on polymeric materials/Effects of	86
(simulation)A kinetic analysis of spore inactivation in a composite	124
(simulation)Analytical basis for planetary quarantine	177
(simulation)Behavior of certain soil microorganisms in the "artificial Mars"	159
(simulation)Growth of bacteria in soils from Antarctic dry valleys	115
(simulation)Influence of a set of extremal factors on biological	91
(simulation)Kinetics of disinfection	101
(simulation)Mariner-Mars 1971 prelaunch analysis of probability	146
(simulation)Microbial burden prediction model	147
Simulation of the Venus atmosphere	89
(simulation)Pioneer program. Pioneer F/G planetary quarantine problem	98
(simulation)Planetary quarantine constraints for advanced missions	136
(simulation)Spacecraft monitoring method and procedures	188
(simulation)Survival of Antarctic desert soil bacteria exposed to	116
(simulation)The release of buried microbial contamination by aeolian	84
(simulation)The role of soil science in space exploration	14
(soil)A study of the dry heat resistance of naturally occurring	134
soil bacteria exposed to various temperature and to three years	116
(soil)Dry heat destruction rates of microorganisms on surfaces	166
soil microorganisms in the "artificial Mars" chamber/Behavior of	159
soil science in space exploration/The role of	14
soils from Antarctic dry valleys/Growth of bacteria in	115
sonification method for removal of microorganisms from surfaces/	64
sono-chemical approach in sterilization problems/An investigation	35
sono-chemical approach in sterilization problems/An investigation	36
sono-chemical approach in sterilization problems/An investigation	47
sono-chemical approach in sterilization problems/An investigation	48
sono-chemical approach in sterilization problems/An investigation	66
space components/Laboratory for monitoring bacterial contamination	27

space conditions/Survival of microorganisms under simulated	93
(spacecraft)A description of the model assembly sterilizer for t	133
(spacecraft)A study of the probability of depositing viable orga	24
Spacecraft cleaning and decontamination techniques	178
spacecraft components/Conference on hazard of planetary contamin	37
Spacecraft component survivability during entry into the Jovian	185
(spacecraft)Contamination of planets by nonsterile flight hardwa	199
(spacecraft)Control of microbial contamination	162
spacecraft/Decontamination and sterilization of lunar and planet	20
spacecraft/Development of parametric data for the establishment	121
spacecraft/Dry-heat resistance of bacterial spores recovered fro	196
spacecraft/Dry-heat sterilization for planetary-impacting	29
(spacecraft)Experimental study of sterile assembly techniques	33
(spacecraft)Laboratory for monitoring bacterial contamination of	27
(spacecraft)Microbial contamination in a clean room when occupie	26
(spacecraft)Microorganisms on Mars	61
spacecraft/Modern methods and means of sterilization of	192
Spacecraft monitoring method and procedures	188
(spacecraft)Planetary quarantine: principles, methods and probl	143
spacecraft]/Principles, methods and problems [methods and means	193
spacecraft/Relative frequency distribution of D _{1250C} values for	110
Spacecraft sterilization	44
Spacecraft sterilization and planetary quarantine, background of	57
Spacecraft sterilization - implications and suggestions	43
spacecraft sterilization/Interdisciplinary design evaluation mod	46
spacecraft/Sterilization of	153
spacecraft/Sterilization of Mars	25
spacecraft sterilization parameters/Studies of	197
Spacecraft sterilization requirements	42
(spacecraft)Sterilization techniques	154
spacecraft system/Biological decontamination of a	45
(spacecraft)The operations problem of sterilization	7
(spacecraft)The special problem of encapsulated contaminants	41
(spacecraft)The use of ethylene oxide: a partially annotated bi	10
(spacecraft)Use of sporicides and heat to sterilize resins	21
space environmental studies/Natural	186
space exploration/The role of soil science in	14
space hardware/A review of natrually occurring interior microbia	195
space hardware/Microbiological assay of	126
(space hardware)Services provided in support of the planetary q	128
space hardware/Sterilization of	168
space/Possibility of the spreading of viable germs in outer	131
(space probe)Comparative studies of conceptual design and qualif	49
space vehicle components/Ecology and thermal inactivation of mic	117
space vehicle components/Ecology and thermal inactivation of mic	118
space vehicle components/Ecology and thermal inactivation of mic	170
spore inactivation in a composite heat and gamma radiation envir	124
spore isolates from the Mariner-Mars 1969 spacecraft/Relative fr	110
(spores)An investigation of a sono-chemical approach in steriliz	36
(spores)A review of naturally occurring interior microbial conta	195

(spores) Development of parametric data for the establishment of	121
(spores) Effect of various gas atmospheres on destruction of micro	65
(spores) Environmental microbiology as related to planetary quara	167
spores/Gamma irradiation of <u>B. subtilis</u>	15
(spores) Investigation of gamma sterilization	1
(spores) Kinetics of disinfection	101
(spores) Microbial release from solids after simulated hard landi	132
(spores) Microbiological assay of space hardware	126
spores/Observations regarding the sterilizing effect of ethylene	5
spores occluded in water-insoluble crystals to three sterilizati	56
spores on mated surfaces/Dry-heat resistance of <u>B. subtilis</u> var.	181
(spores) Resistance of microorganisms to high vacuums	3
(spores) Services provided in support of the planetary quarantine	127
(spores) Services provided in support of the planetary quarantine	130
(spores) Some observations on bacterial thermal death time curves	18
(spores) Some properties of heat-resistant and heat-sensitive str	75
spores/Studies with a simulated Martian environment. Germinatio	22
(spores) The use of ethylene oxide: a partially annotated bibli	10
spores under several temperature and humidity conditions/Surviva	104
spores under several temperature and humidity conditions/Surviva	183
spores under some simulated lunar surface conditions/Survival of	149
sporicides and heat to sterilize resins/Use of	21
sterile assembly techniques/Experimental study of	33
sterilizable battery separators/Investigations on	85
sterilizable separators/Heat	160
(sterilization) A description of the model assembly sterilizer fo	133
sterilization agents/Resistance of <u>B. subtilis</u> var. <u>niger</u> spores	56
sterilization: a partially annotated bibliography/The use of et	10
(sterilization) Assembly/sterilizer facility feasibility program	76
(sterilization) Assembly/sterilizer facility feasibility program	77
(sterilization) A study of the dry heat resistance of naturally o	134
(sterilization) Conference on hazard of planetary contamination d	37
(sterilization) Control of microbial contamination	162
sterilization conversion/High vacuum	17
(sterilization) Design and development of a bio-isolator suit sys	151
(sterilization) Ecology and thermal inactivation of microbes in a	117
sterilization for planetary-impacting spacecraft/Dry-heat	29
Sterilization handbook	31
sterilization - implications and suggestions/Spacecraft	43
sterilization/Interdisciplinary design evaluation models of bioc	46
sterilization/Investigation of gamma	1
sterilization/Log-normal model for microbial survival in heat	51
(sterilization) Lunar rough landing capsule development program	16
(sterilization) Microbial contamination in a clean room when occu	26
(sterilization) Microbiological assay of space hardware	126
(sterilization) Microorganisms on Mars	61
sterilization model/A stochastic	52
(sterilization) Observations regarding the sterilizing effect of	5
sterilization of lunar and planetary spacecraft/Decontamination	20
Sterilization of Mars spacecraft	25

sterilization of microorganisms/Role of water activity in the dr	112
Sterilization of spacecraft	153
sterilization of spacecraft/Modern methods and means of	192
sterilization of spacecraft]/Principles, methods and problems [me	193
sterilization of spacecraft/Proceedings of meeting on problems a	8
Sterilization of space hardware	168
sterilization parameters/Studies of spacecraft	197
(sterilization)Peracetic acid aerosols	2
(sterilization)Planetary quarantine plan, Voyager project	73
(sterilization)Planetary quarantine: principles, methods and pr	143
sterilization problems/An investigation of a sono-chemical appro	35
sterilization problems/An investigation of a sono-chemical appro	36
sterilization problems/An investigation of a sono-chemical appro	47
sterilization problems/An investigation of a sono-chemical appro	48
sterilization problems/An investigation of a sono-chemical appro	66
(sterilization)Problems in the design of unmanned spacecraft for	19
sterilization-reliability effects/An integrated test program for	30
sterilization requirements/Spacecraft	42
sterilization requirements/Spacecraft sterilization and planetar	57
(sterilization)Services provided in support of the planetary qua	129
sterilization/Spacecraft	
(sterilization)Spacecraft cleaning and decontamination technique	178
sterilization/Synergistic characteristics of thermoradiation	182
Sterilization techniques	154
sterilization/The operations problem of	7
(sterilization)The special problem of encapsulated contaminants	41
sterilize resins/Use of sporicides and heat to	21
sterilizing effect of ethylene oxide-carbon dioxide mixtures on	5
stratosphere/Survival chances of microorganisms under the enviro	82
surface/A study of the dry heat resistance of naturally occurrin	134
surface conditions/Survival of bacterial spores under some simul	149
(surface contamination)Laboratory for monitoring bacterial conta	27
(surface contamination)Peracetic acid aerosols	2
(surface contamination)Services provided in support of the plane	38
(surface contamination)Services provided in support of the plane	39
(surface contamination)Services provided in support of the plane	129
(surface contamination)The vacuum probe for removing organisms f	63
surface environment and possible biology of Mars/The	102
surface sampler/Laboratory evaluation of the plastic vacuum prob	125
surfaces/An improved sonification method for removal of microorg	64
surfaces/A study of the effects of relative humidity on small pa	198
surfaces by chemical approaches/Detection of low levels of micro	96
surfaces by chemical approaches/Detection of low levels of micro	137
surfaces by Rodac plates/Deposition of nutrients to	40
surfaces/Dry heat destruction rates of microorganisms on	105
surfaces/Dry heat destruction rates of microorganisms on	166
surgery suites/Microbiology of	190
Surveyor III electrical cabling/Microbiological sampling of retu	157
survivability during entry into the Jovian atmosphere/Spacecraft	185
survival and release of viable microorganisms from a solid mater	58

Survival chances of microorganisms under the environmental condi	82
survival in deep space environment/Microbial	180
survival in heat sterilization/Log-normal model for microbial	51
Survival of Antarctic desert soil bacteria exposed to various te	116
Survival of bacterial spores under some simulated lunar surface	149
Survival of microbial spores under several temperature and humid	104
Survival of microbial spores under several temperature and humid	183
Survival of microorganisms in a simulated Martian environment	139
Survival of microorganisms under simulated space conditions	93
survive in simulated Jupiter atmosphere/Terrestrial organisms	158
(swab-rinse)Services provided in support of the planetary quaran	74
(swab-rinse technique)Services provided in support of the planet	129
(systems analysis)Contamination control	120

(techniques)A description of the model assembly sterilizer for t	133
(techniques)AEC/NASA symposium on contamination control; current	71
(techniques)An improved sonification method for removal of micro	64
(techniques)An investigation of a sono-chemical approach in ster	35
(techniques)An investigation of a sono-chemical approach in ster	36
(techniques)A review of naturally occurring interior microbial c	195
techniques associated with the decontamination and sterilization	8
(techniques)Biological decontamination of a spacecraft system	45
(techniques)Checklist of good contamination control practices fr	109
(techniques)Clean room personnel	83
(techniques)Contamination control	120
(techniques)Design and development of a bio-isolator suit system	151
(techniques)Detection of low levels of microbial contamination o	137
(techniques)Ecology and thermal inactivation of microbes in and	118
techniques/Experimental study of sterile assembly	33
(techniques)Practical procedures for microbial decontamination	9
(techniques)Reduction of microbial shedding from humans	67
(techniques)Release of microorganisms from solid materials	141
(techniques)Services provided in support of the planetary quaran	54
(techniques)Services provided in support of the planetary quaran	74
(techniques)Some properties of heat-resistant and heat-sensitive	75
techniques/Spacecraft cleaning and decontamination	178
techniques/Sterilization	154
(techniques)Synergistic characteristics of thermoradiation steri	182
(techniques)The preparation and assay of T4 bacteriophage	189
(techniques)The vacuum probe for removing organisms for counting	63
temperature and humidity conditions/Survival of microbial spores	104
temperature and humidity conditions/Survival of microbial spores	183
(temperature)Survival of microorganisms under simulated space co	93
(temperature)The search for life on Mars - where we stand today	150
(temperature)The surface environment and possible biology of Mar	102
thermal death time curves/Some observations on bacterial	18
Thermal destruction studies/Dry heat destruction rates of <u>B. sub</u>	99
thermal inactivation of microbes in and on interplanetary space	117

thermal inactivation of microbes in and on interplanetary space	118
thermal inactivation of microbes in and on interplanetary space	170
thermal radiative characteristics of viable microorganisms/The (thermoradiation)Services provided in support of the planetary q	80
thermoradiation sterilization/Synergistic characteristics of (tolerance)Effect of a high vacuum on microorganisms	128
(tolerance)Microbial survival in deep space environment	182
(tolerance)Planetary quarantine supporting activities	152
(tolerance)Resistance of microorganisms to high vacuum	180
(tolerance)Resistanc	138
(tolerance)Sterilization of spacecraft	3
(tolerance)Studies of spacecraft sterilization parameters	153
(tolerance)Surveyor sterilization. Part III. Further compatabi	197
toxigenicity/Some properties of heat-resistant and heat-sensitiv	11
	75
 Ultra-high vacuum and microorganisms	32
(ultra-high vacuum)High vacuum sterilization conversion	17
(ultrasound)An improved sonification method for removal of micro	64
(ultrasound)An investigation of a sono-chemical approach in ster	35
(ultrasound)An investigation of a sono-chemical approach in ster	36
(ultrasound)An investigation of a sono-chemical approach in ster	47
(ultrasound)An investigation of a sono-chemical approach in ster	48
(ultrasound)An investigation of a sono-chemical approach in ster	66
(ultrasound)Checklist of good contamination control practices fr	109
(ultrasound)Services provided in support of the planetary quaran	38
(ultrasound)Services provided.in support of the planetary quaran	53
(ultrasound)Services provided in support of the planetary quaran	54
(ultrasound)Services provided in support of the planetary quaran	55
(ultrasound)Services provided in support of the planetary quaran	74
(ultraviolet light)The search for life on Mars - where we stand	150
(ultraviolet light)The thermal radiative characteristics of viab	80
(ultraviolet light)Ultra-high vacuum and microorganisms	32
(ultraviolet radiation)Influence of a set of extremal factors on	91
ultraviolet radiation in microbiological laboratories/Use of	6
(ultraviolet radiation)Modern methods and means of sterilization	192
(ultraviolet radiation)Survival of bacterial spores under some s	149
(ultraviolet radiation)The surface environment and possible biol	102
(ultraviolet radiation)The upper atmosphere of Jupiter	179
(ultraviolet)Survival chances of microorganisms under the enviro	82
(ultraviolet)Survival of microorganisms under simulated space co	93
(unmanned spacecraft)Design and development of a bio-isolator su	151
unmanned spacecraft for planetary and interplanetary exploration	19
UV and vacuum/Inactivation and division delay of <u>E. coli</u> B/r by	114
(UV radiation)Possibility of the spreading of viable germs in ou	131
 vacuum/Inactivation and division delay of <u>E. coli</u> B/r by combine	114
vacuum on bacterial cells/Effects of simulated space	113

vacuum on microorganisms/Effect of a high	152
vacuum probe for removing organisms for counting/The	63
vacuum probe surface sampler/Laboratory evaluation of the plastic	125
vacuum/Survival of Antarctic desert soil bacteria exposed to vacuum	116
(vacuum) Survival of bacterial spores under some simulated lunar	149
(vacuum) Survival of microorganisms under simulated space conditions	93
Vegetative life on Venus? Or investigations with algae which grow	103
(velocity) Microbial release from solids after simulated hard landing	132
ventilating system for clean rooms/Investigation of a new	78
Venus atmosphere on polymeric materials/Effects of simulated	86
Venus atmosphere/Simulation of the	89
(viability) A cryobiologist's conjecture of planetary life	88
(viability) An investigation of a sono-chemical approach in sterilization	35
(viability) An investigation of a sono-chemical approach in sterilization	36
(viability) An investigation of a sono-chemical approach in sterilization	66
(viability) A stochastic sterilization model	52
(viability) Behavior of certain soil microorganisms in the "artificial	159
(viability) Dry heat destruction rates of microorganisms on surfaces	105
(viability) Dry heat destruction rates of microorganisms on surfaces	166
(viability) Effect of a high vacuum on microorganisms	152
(viability) Effect of various gas atmospheres on destruction of microorganisms	65
(viability) Effects of aeolian erosion on microbial release from	140
(viability) Environmental microbiology as related to planetary qu	100
(viability) Estimation of particulate loads on components of devi	122
(viability) Growth of bacteria in soils from Antarctic dry valley	115
(viability) Kinetics of disinfection	101
(viability) Log-normal model for microbial survival in heat sterilization	51
(viability) Mariner-Mars 1971 post-launch analysis of compliance	145
(viability) Mariner-Mars 1971 prelaunch analysis of probability of	146
(viability) Microbial analysis	156
(viability) Microbial release from solids after simulated hard landing	132
(viability) Microbiological sampling of returned Surveyor III elements	157
(viability) Microorganism shedding by human beings	60
viability of microorganisms in simulated space/Study of	23
(viability) Planetary quarantine analysis for an unmanned Mars or	148
(viability) Relative frequency distribution of D ₁₂₅ C values for species	110
(viability) Services provided in support of the planetary quarantine	38
(viability) Services provided in support of the planetary quarantine	53
(viability) Services provided in support of the planetary quarantine	54
(viability) Services provided in support of the planetary quarantine	55
(viability) Services provided in support of the planetary quarantine	74
(viability) Some observations on bacterial thermal death time curves	18
(viability) Survival chances of microorganisms under the environment	82
(viability) Survival of Antarctic desert soil bacteria exposed to	116
(viability) Survival of microorganisms in a simulated Martian environment	139
(viability) Survival of microorganisms under simulated space conditions	93
(viability) The search for life on Mars - where we stand today	150
viable germs in outer space/Possibility of the spreading of	131
viable microorganisms from a solid material after a hard impact/	58
viable microorganisms/The thermal radiative characteristics of	80

viable organisms on Mars during the Mariner 1964 mission/A study (Viking mission)	24
Planetary quarantine: Recontamination phase	94
(virology)The preparation and assay of T4 bacteriophage	189
Virucidal properties of dimethyl sulfoxide	79
Voyager project/Planetary quarantine plan	73
water activity in the dry heat sterilization of microorganisms/R	112
water/Dry heat destruction rates of <u>B. subtilis</u> var. <u>niger</u> in a	97
(water)Effects of simulated space vacuum on bacterial cells	113
(water)The search for life on Mars - where we stand today	150
(water)The surface environment and possible biology of Mars	102

JOURNALS PUBLISHING

PLANETARY QUARANTINE RELATED ARTICLES

Below is an alphabetical list of journals in which articles germane to planetary quarantine have been published. The number of articles from each journal cited in this bibliography is indicated parenthetically.

Air Engineering	(1)
Applied Microbiology	(8)
Astronautics and Aeronautics	(1)
Biophysik (Germany)	(1)
BioScience	(1)
Contamination Control	(3)
Cryobiology	(1)
Environmental Biology and Medicine	(7)
Experimental Biology and Medicine	(2)
Hospital Progress	(1)
Icarus	(1)
Journal of Bacteriology	(1)
Journal of Pharmacy and Pharmacology (United Kingdom)	(1)
Journal of Theoretical Biology	(1)
Medical Research Engineering	(1)
Science	(2)
Science and Public Affairs - Bulletin of the Atomic Scientists	(1)
Space Life Sciences	(4)
Sterne und Weltraum (Germany)	(1)

PRECEDING PAGE BLANK NOT FILMED

PROCEEDINGS PUBLISHING

PLANETARY QUARANTINE RELATED PAPERS

Below is an alphabetical list of proceedings in which papers germane to planetary quarantine have appeared. The number of papers from each meeting cited in this bibliography is indicated parenthetically.

- AEC/NASA Symposium on Contamination Control: Current and Advanced Concepts in Instrumentation and Automation. Sanguinetti, M., ed. Sandia Corporation, Albuquerque, New Mexico. 1967. (2)
- American Institute of Aeronautics and Astronautics, Third Thermophysics Conference, Los Angeles, California. 1968. (1)
- American Society for Microbiology, 65th Annual Meeting, Atlantic City, New Jersey. 1965. (1)
- Chemical Specialties Manufacturers Association, Inc., Forty-second Annual Meeting, New York. 1955. (1)
- COSPAR, A Session of the Fifth International Space Science Symposium, Florence, May 1964. (Florkin, M., ed. Life Sciences and Space Research, Vol. III. Amsterdam, North-Holland Publishing Co., 1965). (1)
- COSPAR, A Session of the Sixth International Space Science Symposium, Mar del Plata, May 1965. (Brown, A.H. and M. Florkin, eds. Life Sciences and Space Research, Vol. IV. Amsterdam, North-Holland Publishing Co., 1966). (1)
- COSPAR, 12th Plenary Meeting of Working Group V, Prague, May 1969. (Vishniac, W. and F.G. Favorite, eds. Life Sciences and Space Research, Vol. VIII. Amsterdam, North-Holland Publishing Co., 1970). (1)
- COSPAR, 12th Plenary Meeting of Working Group V, Leningrad, May 1970. (Vishniac, W., ed. Life Sciences and Space Research, Vol. IX. Berlin, Akademie-Verlag, 1971). (1)
- Electrochemical Society, October 1968. Montreal, Canada. New York, John Wiley & Sons, 1971. (1)

- International Congress of Microbiology Standardization, Washington,
D.C. 1960. (1)
- Lunar Science Conference, Second, Boston, Massachusetts. 1971. (1)
- National Academy of Science - National Research Council/Space Science
Board. Washington, D.C. 1965. (1)
- NASA Symposium on Clean Room Technology in Surgery Suites. Midwest
Research Institute, Kansas City, Missouri. 1971. (1)
- Society for Industrial Microbiology, 25th General Meeting, Columbus,
Ohio. August 1968. (Developments in Industrial Microbiology,
Vol. 10. Washington, D.C., American Institute of Biological
Sciences. 1969). (1)
- U.S. National Aeronautics and Space Administration, Proceedings of
meetings on Problems and Techniques Associated with the
Decontamination and Sterilization of Spacecraft. Posner, J.,
ed. June 1960. Washington, D.C., 1961. (1)

CORPORATE SOURCES

Below is an alphabetical address list of NASA centers, NASA contractors, and other sources of the material cited in this bibliography.

Ames Research Center
National Aeronautics and Space Administration
Moffet Field, California 94035

Avco Corporation
Lowell Industrial Park
Lowell, Massachusetts 01851

Becton Dickinson Research Center
P.O. Box #11276
Raleigh, North Carolina 27604

Boeing Company, Aerospace Group
P.O. Box #3999
Seattle, Washington 98124

Brooks Air Force Base
San Antonio, Texas 78235

Cambridge Research Laboratories
United States Air Force
Bedford, Massachusetts 01730

Communicable Disease Center
Phoenix Laboratories
4402 North Seventh Street
Public Health Service
U.S. Department of Health, Education and Welfare
Phoenix, Arizona 85014

Cincinnati Research Laboratories
Food and Drug Administration
U.S. Department of Health, Education and Welfare
1090 Tusculum Avenue
Cincinnati, Ohio 54226

Dynamic Science Corporation
1900 Walker Avenue
Monrovia, California 91016

Exotech Systems, Inc.
525 School Street, S.W.
Washington, D.C. 20024

Florida State University
Department of Statistics
Tallahassee, Florida 32306

Fort Detrick
U.S. Department of the Army
Frederick, Maryland 21701

General Electric Company
Re-entry and Environmental Systems Division
3198 Chestnut Street
Philadelphia, Pennsylvania 19101

Goddard Space Flight Center
Greenbelt, Maryland 20771

Grumman Aerospace Corporation
South Oyster Bay Road
Bethpage, New York 11714

Hughes Aircraft Company
Aerospace Group
Centinela Avenue and Teale Street
Culver City, California 90230

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91103

Langley Research Center
Langley Station
Hampton, Virginia 23365

Lockheed Missiles and Space Company
P.O. Box #504
Sunnyvale, California 94088

Manufacturing Chemists Association, Inc.
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009

National Academy of Sciences
National Research Council
2101 Constitution Avenue, N.W.
Washington, D.C. 20037

National Aeronautics and Space Administration
400 Maryland Avenue, S.W.
Washington, D.C. 20546

NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103

National Canners Association
Washington Research Laboratory
1133 20th Street, N.W.
Washington, D.C. 20036

National Research Corporation
70 Memorial Drive
Cambridge, Massachusetts 02142

Philco-Ford Corporation
Aerospace and Defense Systems Operations
Ford Road
Newport Beach, California 92663

St. Johns University
Grand Central and Utopia Parkway
Jamaica, New York 11432

Sandia Corporation
Sandia Base
P.O. Box #5800
Albuquerque, New Mexico 87115

University of Minnesota
Space Science Center
School of Public Health
Minneapolis, Minnesota 55455

Wright Air Development Center
Wright-Patterson Air Force Base
Dayton, Ohio 45433